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EQUINOX RESOURCES (WASH.) INC.
VAN STONE MINE, WASHINGTON STATE, USA

RECLAMATION AND CLOSURE PLAN

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For
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(formerly Zicor Mining Inc.)

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RECLAMATION AND CLOSURE PLAN

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1.0 INTRODUCTION

The Van Stone Mine is an open pit lead-zinc property located in Stevens County in northeast Washington State (Figure 1). The property is owned by Equinox Resources (Wash.) Inc., a wholly owned subsidiary of Mano River Resources Inc. Formerly known as Zicor Mining Inc., Mano River Resources is a public mineral exploration/development company listed on the Vancouver and London Stock Exchanges.

The property was discovered in 1952 and operated intermittently by Asarco during the 1950's and 1960's. The property was subsequently subject to exploration under a Joint Venture arrangement in the 1970's. Equinox Resources Inc. acquired the property in 1990 and placed it back into production in 1991. The operations were subsequently suspended in late 1992 due to low metal prices and have been under care and maintenance since January 1993.

Equinox Resources filed a preliminary Reclamation and Closure Plan with the Washington State Department of Natural Resources prior to the reopening of the mine in 1991. However, under current legislation, Equinox Resources is required to file a revised Reclamation and Closure Plan.

The following Reclamation and Closure Plan, which has been developed in accordance with "Best Management Practices for Reclaiming Surface Mines in Washington and Oregon (1996)" and the requirements for reclamation set out under the Washington Surface Mining Act (Chapter 78.44 RCW), provides for two possible eventualities; closure of existing operations without additional mining, and closure following the mining and processing of additional known ore reserves.

This Reclamation and Closure Plan adopts a "Post Mining Reclamation" approach to reclaiming areas affected by mining for both possible eventualities. Alternative approaches, such as "Concurrent, Progressive, and Segmental" to reclamation are either not applicable, since the operations are now closed, or are impractical, since much of the existing infrastructure may be required in the future to accommodate the mining of remaining reserves. However, there are some areas, such as the outer embankments of the tailings area that can be reclaimed before mining ceases provided they do not preclude resumption of operations at some future date.

2.0 RECLAMATION PLAN OBJECTIVE

The objective of this Reclamation and Closure Plan is to provide a systematic approach to decommissioning the Van Stone Mine and returning all disturbed lands associated with mine operations (post-1971) to a Mixed Land Use capability. The Mixed Land Use classification is defined herein as consisting of a combination of forest lands, open space lands, shrub and grasslands, wet lands, wildlife habitat, talus slopes, and agricultural lands. The following goals are implicit in achieving this primary objective:

- the long-term preservation of water quality within and downstream of decommissioned operations;

- the long-term stability of engineered structures including the waste rock storage area, tailings storage facility, and open pit;
- the long-term stabilization of all exposed erodible materials, particularly those of the outer tailings embankments;
- the natural integration of disturbed lands into surrounding landscape, and restoration of the natural appearance of the area after mining ceases, to the greatest possible extent; and
- the establishment of a self-sustaining vegetative cover consistent with mixed land uses and wildlife needs.

As an overall approach to achieving this objective, the Reclamation and Closure Plan must be sufficiently flexible to allow for future changes in the mine plan and to take advantage of information obtained from ongoing reclamation research.

3.0 PROJECT ACCESS AND SETTING

3.1 Project Access

The Van Stone operations are located in the Onion Creek watershed approximately 21 miles northeast of the community of Colville, Stevens County in the extreme northeast quadrant of Washington State. Access to the property is northeast from Colville via Highway 25 or alternatively northeast via secondary roads to the Onion Creek turnoff (Onion Creek School) and then southeast along the Northeast Fork of Onion Creek via tertiary roads to the Van Stone operations area (Figures 1 and 2).

3.2 Project Legal Description

The entire project area lies within Township T38N and Range R40E (Figure 3). Various components of the project are located on Sections 28, 29, 30, 32, 33, and 34 of T38N, R40E. A detailed Land Status Map showing the location of the main mining components (tailings area, tailings pipeline, operations area, and open pit) is given in Figure 4. A full legal description of the land titles is presented in Appendix A.

3.3 Project Setting

A comprehensive analyses of the entire Onion Creek Watershed was carried out in 1997 by Boise Cascade Corporation in conjunction with a number of organizations, including Washington Departments of Natural Resources, Department of Ecology, Stevens County Conservation District, Vaagen Brothers Lumber, Arden Tree Farm, Inland Empire Paper, Maurice Williamson, and the Washington Farm Forestry Association (Boise Cascade Corporation, 1997). By any standard, the Boise Cascade Corp. studies (Onion Creek Watershed Analysis, 1997) can be regarded from the perspective of watershed ecology as exhaustive and of extremely high quality,

covering topography, geology, soils, climate, hydrology, vegetation, fisheries, land use, and watershed processes. The following description of the project setting are extracts derived from that report.

Onion Creek watershed, which has a catchment of 47,360 acres, drains in a northwesterly direction and discharges to the Columbia River near the community of Onion Creek on Highway 25. The elevation of the watershed ranges from 5,775 feet in the headwaters to 1,290 feet where it joins the Columbia River. Climate is transitional between maritime and continental with mean annual precipitation in the watershed ranging from 15 to 35 inches per year (Figure 5). The Van Stone operations are located in the headwaters sub-basin, where annual rainfall averages 30 inches per year. 24-hour precipitation in the headwaters sub-basin ranges from 1.8 inches over a 2-year return period to 3.1 inches over a 100-year return period. A precipitation frequency curve derived on behalf of Boise Cascade for the Onion Creek watershed is presented in Figure 6 (Boise Cascade Corp, 1998).

Approximately 50% of the WAU is overlain with unconsolidated glacial sediments consisting of till, outwash, and lacustrine origin. Bedrock includes folded and faulted Paleozoic sedimentary and metasedimentary rock on sideslopes and ridges of foothills, and Mesozoic granitic rock on footslopes and sideslopes of foothills. A land form map of the Onion Creek watershed is shown in Figure 7 (Boise Cascade Corp., 1997). The Van Stone tailings area is located in an area of deep tills, while the open pit is located in an area where soils are of variable thickness overlying Paleozoic metasedimentary rocks. Soils in the area of the tailings storage facility are categorized as moderately erodable while those in the disturbed areas of the mine site are categorized as variable (Figure 8).

Approximately 52% of the watershed is devoted to forestry. Other land uses include agriculture (mainly pasture land), small scale ranching, rural residential, open pit quarries (construction aggregate), base metal mining (Van Stone lead-zinc operations), and several minor mineral claims. A current land use and vegetative cover map taken from the Boise Cascade Corp. analyses of the Onion Creek watershed is shown in Figure 9. Both the tailings storage area and mine site area are categorized as non-forested lands designated for mine use.

Lower elevation forest cover consists mostly of western red cedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), and some Englemann spruce (*Picea engelmannii*). Riparian vegetation consists of small to medium mixed conifer stands ranging from sparse to dense growths (Figure 10). Canopy closure generally ranges from 90% to 100% (Figure 11). Higher elevation forest cover consists of Douglas fir (*Pseudotsuga menziesii* var. *glauca*), grand fir (*Abies grandis*), western larch (*Larix occidentalis*), lodgepole pine (*Pinus contorta*), and Englemann spruce. Deciduous species include trembling aspen (*Populus tremuloides*), paper birch (*Betula papyrifera* var. *commutata*), and sitka alder (*Alnus sinuata*)

There are no public water supplies in the watershed. Northport and Onion Creek School obtain potable water supplies from wells. Flood frequency analyses for each of the Onion Creek sub-basins (Boise Cascade Corp., 1997) indicates that the 2, 25, 50, and 100-year return flood flows

in Onion Creek immediately below the Van Stone tailings facility range from 87 cfs, 206 cfs, 234 cfs, and 262 cfs, respectively.

Although there is a 100 ft high falls 1.2 miles upstream from the mouth of Onion Creek, brook trout (*Salvelinus fontinalis*), and rainbow trout (*Oncorhynchus mykiss*) are found throughout the watershed. The falls near the mouth of Onion Creek form a migration barrier to fish entering the upper portion of the watershed from the Columbia River. Salmonid species that have been observed in the past in small numbers in the lower mile of Onion Creek below the falls include adfluvial kokanee (*Oncorhynchus nerka*), bull trout (*Salvelinus confluentus*), and cutthroat trout (*Oncorhynchus clarkii*). Bull trout do not occur above the falls.

Other than the falls at the mouth of the creek there are no other physical barriers to fish migration. Brook trout and rainbow trout utilize the entire network of tributaries above the falls throughout all life stages and do not segregate into specific areas (Boise Cascade Corp., 1997). There are two potential road barriers (culverts) on the Northeast Fork of Onion Creek; one at the main Onion Creek road and one at a logging road crossing (Figure 12). However, neither of these precludes fish use from the mine site area (Boise Cascade Corp., 1997).

The Northeast Fork of Onion Creek in the mine site area is categorized as a confirmed fish-bearing Type 3 Stream for the majority of its length, although fish presence has not been confirmed in the upper reaches of each tributary (Figure 13).

4.0 LAND USE AND CAPABILITY OBJECTIVES

Forestry is the primary land use in the Van Stone operations area. Forested wildlife habitat and logging occupy approximately 52% of the Onion Creek Watershed. Secondary land uses include open space, agriculture, and recreation, and minor residential commercial uses. Agriculture consists mainly of pasture land (Boise Cascade Corp., 1997). Recreation is largely hunting, particularly white-tailed deer. The predominant land use is best described as mixed, giving support to the overall reclamation objective of returning all mine disturbed lands to that of a productive Mixed Land Use.

Although specific components of land in the area of the mine site has been logged and cleared to accommodate mine development, much of the property still contains stands of secondary and mature forest. Forests in the immediate operations area include interior Douglas-fir (*Pseudotsuga menziesii* var. *glauca*), grand fir (*Abies grandis*), western larch (*Larix occidentalis*), lodgepole pine (*Pinus contorta* var. *latifolia*), and Engelmann spruce (*Picea engelmannii*). The tailings facility is surrounded by lodgepole pine, interior Douglas-fir, grand fir, and some western larch. Forest cover in the area of the mine site consists of a mixed deciduous-coniferous cover, composed of trembling aspen, paper birch (*Betula papyrifera*), lodgepole pine, interior Douglas-fir, and western red-cedar (*Thuja plicato*). Kinnikinnick (*Arctostaphylos uva-ursi*), a species of ground cover, has been singled out here for special note, since it appears to be the one native species that has the capability to recolonize tailings sands in areas where there is some shade and moisture.

The Van Stone operations area provides habitat for a range of wildlife including white-tailed deer (*Odocoileus virginianus*), mule deer (*Odocoileus hemionus hemionus*), and black bear (*Ursus americanus*). There are also occasional reports of coyote (*Canis latrans*) and cougar (*Felix concolor*) in the area. Although there have been no detailed wildlife investigations of the mine site, it is expected that the area hosts a rather large spectrum of small mammals including bats (*Chiroptera*), mice, shrews, squirrels, chipmunks, gophers, voles (*Rodentia*), snowshoe hare (*Lagomorpha*), and members of the weasel family (*Mustelidae*).

Although there is very little standing or open water or wetland habitat in the area, the Van Stone property provides habitat for a large number of passerines, some waterfowl, upland game birds such as grouse, owls, and representatives of the raptor family (hawks, eagles). Many of the species that frequent the area are migratory or transitory.

On the basis of a review of the Trax Check (December, 1998), a database of sensitive habitats or locations of special plants and animals, maintained by regulatory agencies, indicates that there are no known special plants or animals in the project area (Township T38N, Range R40E, Sections 28 through 34). Because much of the land required for mining was cleared for project components several years ago, it is unlikely that there are any endangered, threatened, or rare animal species, plant species, or plant communities within the project area.

As indicated in the previous section, brook trout (*Salvelinus fontinalis*), and rainbow trout (*Oncorhynchus mykiss*) are found throughout the watershed. However a 100 ft high falls 1.2 miles upstream from the mouth of Onion Creek, preclude adfluvial kokanee (*Oncorhynchus nerka*), bull trout (*Salvelinus confluentus*), and cutthroat trout (*Oncorhynchus clarkii*) from Lake Roosevelt and the Columbia River from entering the upper portion of the watershed. There are no reports or evidence that bull trout occur above the falls.

Bull trout were originally described in 1858, but treated as a variant or subspecies of Dolly Varden char until just recently. In 1978 they were resurrected from synonymy as a distinct species, even though their taxonomic status is not clear. The loss of peripheral southern populations of bull trout, and evidence of decline elsewhere, has lead to a general concern and petitioning to have the species listed under the US Endangered Species Act. The petition was federally registered in May 1993 under the US Fish & Wildlife Service (Department of Interior) and the species was eventually listed (1994) in conterminous US. However, there was insufficient evidence to extend this protection to the species' entire range (British Columbia and Alaska). Bull trout have since been Blue Listed in British Columbia, giving it the status of vulnerable.

5.0 RECLAMATION RESEARCH PROGRAM

An important component of the Reclamation and Closure Plan is an ongoing Reclamation Research Program with the objective of establishing the necessary methods and materials required to implement a successful abandonment plan that will achieve the stated objectives of returning all disturbed lands to an equivalent pre-mining Mixed Land Use. The Reclamation

Research Program, which has been ongoing since 1997, and has been administered by (planned, co-ordinated, and implemented) Equinox Resources Inc. care and maintenance staff located at Colville, in conjunction with assistance of consultants to the project, is outlined in the following subsection.

It is expected that a concurrent Reclamation Research Program will help fostered the development of site-specific knowledge and experience required to guide an effective reclamation abandonment plan. Expertise developed from on-site research can be supplemented, where necessary, with information developed by the Washington State Department of Natural Resources, Department of Ecology, the Environmental Protection Agency, consultants with agronomic expertise, and commercial nurseries.

The program consist of three primary components as follows:

1. **Identification of available sources of suitable growth medium** in the immediate mine site area that can be used to reclaim tailings and waste rock surfaces. The analyses of overburden (subsoils) chemistry in the mine site area for purposes of determining occurrences of growth inhibitors and soil amendment requirements.
2. **Establishing a series of test plots on various disturbed materials** in the mine site area (tailings slopes, tailings surfaces, and waste rock dumps) to determine the optimum depth of materials, soil amendments, and moisture requirements to sustain growth. At this time it is expected that the majority of growth medium will consist of overburden (subsoils) and all reclaimed areas will require the application of agricultural grade fertilizers to ensure a self-supporting vegetative cover.
3. **Documenting natural recolonization successes** for purposes of determining those species that can be readily adapted to revegetating various reclamation units (waste rock dumps, tailings slopes, road sides, littoral/riparian areas),

The Reclamation Research Program is expected to be adjusted, modified, and revised on the basis of experience and success, and on the basis of advice and input from regulatory agencies, and results obtained from other research projects, before they are implemented on a full scale basis. As a result, the Reclamation and Closure Plan will, for the most part, be driven by the results of information gained from test programs and ongoing reclamation research.

5.1 Identification of Available Sources of Growth Medium

The Van Stone operations were constructed before there was a mandatory requirement for detailed soil surveys, and requirements to stockpile salvageable growth medium before mining commenced. As a result, there is little in the way of soil stockpiles from which to draw upon. Consequently, one of the primary objectives of the Reclamation Research Program has been to identify sources of sufficient soil and overburden (subsoils) in economically justifiable locations (i.e. close to where they are needed), to successfully reclaim the site, without unnecessarily

disturbing new areas. Out of necessity there will be heavy reliance on use of overburden (subsoils) rather than soils as a growth medium. And secondly, out of necessity there will be heavy reliance on natural recolonization of unreclaimed surfaces, or promotion of growth over surfaces without soil application, as a means of minimizing soil requirements.

Soils in the area of the mine site consist of, and were derived from, glacial overburden (till) and are classified as being Newbell stony silt loam series (USDA, 1982). There is one stockpile of overburden (subsoils) located on the north side of the operations area, as shown on Figure 14. This stockpile is estimated to contain about 50,000 yd³ of material. These layers of overburden are typically deep and well drained. There is very little to no organic-rich, wetland type soils, or prime agricultural soils in the area of the mine site. There are also some sources of overburden or subsoils in close proximity of the throat of the open pit (9,000 yd³) and upslope of the waste rock dump (2,500 yd³).

Soils in the area of the tailings impoundment are classified as being Merkel stony sandy loam series (USDA 1982). These materials range from 0.5 ft to 2.5 ft deep and generally consist of brown silt (Equinox, 1990). They are described as having low-plasticity, medium density, and contained some organic mulch and roots. This soil layer is underlain by a 5 ft to 10 ft deep layer of dense colluvium and a 5 ft to 50 ft deep layer of very dense overburden. The shallowest soils in the area of the tailings impoundment were found on the north and south side, while the deepest soil layers were found on the west side.

The logged area to the east of the tailings area, described as the East Meadows within the catchment of the tailings area, was tested in the spring of 1999. Although there are no detailed take-off on precise quantities, on the basis of 8 test holes it was found that there was more than sufficiently depth of material to provide the necessary overburden to revegetate the entire tailings area (36,700 yd³). A submission was made to the Department of Natural Resources in May 1999 to commence with the recovery and stockpiling of this material.

5.2 Soil Chemistry and Soil Amendments

Since there is a lack of topsoil in the area, the Reclamation Research Program will concentrate on the usability of previously stockpiled overburden and readily recoverable materials. Samples of overburden from the potential borrow sites will be submitted for chemical testing and characterization for growth inhibitors and required amendments (i.e. lime, fertilizer, sand, peat, sawdust, etc.). The results from a preliminary analysis of tailings and overburden used in the initial test plots are presented in Appendix B.

Generally, the tailings are classified as sandy loam to loamy sand and of neutral pH (6.0 to 7.0). Samples were low in macronutrients, moderately high in sulphates, high in calcium and magnesium, but relatively low in metals with the exception of zinc. The overburden from the stockpile east of the plant site used in the test plots is classified as being a loam with a high percentage of clay (18%). This sample was neutral in pH (8.0), low in phosphorous and moderate

in potassium and nitrogen content, moderately high in calcium and magnesium, and low in metals except aluminium (Appendix B).

The high calcium and magnesium content and neutral pH of all samples indicates that lime or pH adjustment will not be required. The tailings material is non-acid generating and is not classified as a hazardous waste. The low N-P-K content of all samples, particularly the tailings, suggest that these materials require moderately large applications of commercial grade fertilizer. None of the samples contain metals at levels that would be detrimental to plant growth.

If the operations are to be reopened, overburden recovered from the stripping of the open pit will be mapped, quantified, stabilized, and sampled. Representative samples will be submitted to a soils laboratory for comprehensive analysis of texture, nutrients, cation exchange capacity, minerals, and hazardous metal content.

5.3 Test Plots, Seed Mixtures and Planting Techniques

5.3.1 Tailings Area

Reclamation trials of the tailings embankment were initiated in 1994. In October 1994, 120 cu yds. of log yard waste and 1,200 lb commercial (16-20-0-14) fertilizer were tilled into a two acre area on the north, south, and west bench areas of the tailings embankment. Seed Mix No. 4 (Table 1) was then applied rates of 80 lb/acre on steep slopes and 20 lb/acre on flat areas. The study areas were not irrigated. The establishment of vegetation was unsuccessful as the seed washed away with the soil during heavy rains.

The use of biodegradable erosion blankets were tested on tailings embankment slopes of 1.5:1 in November 1995. An area of 30 ft x 110 ft area was regraded or groomed and two different types of biodegradable erosion blankets; one of woven coconut and the other of straw/coconut mix, were treated with 50 lbs of commercial fertilizer and 40 lb of Seed Mix No. 4. Both test plots produced encouraging results despite the fact that they have not been irrigated, re-fertilized, or otherwise maintained since they were first established some four years ago. The less expensive straw mix blanket performed equally as well as the woven coconut type (Figure 25).

After approximately four years both erosion blankets are still in place and surviving grass cover "greens-up" each summer, although a healthy level of colonization appears to have been inhibited by a lack of water, soil nutrients, and erosion. A letter outlining proposed work to be carried out in 1999 was filed with the Department of Natural Resources in May 1999. The list of work items included a proposal to evaluate potential improvement in the cover through fertilization and light irrigation using accumulated rain water from the tailings basins. Permission has also been obtained from the Water Quality division of the Department of Ecology to use the accumulated rain water for irrigation purposes, and a sprinkler system will be installed this summer (1999). An "Azo-Green" coating on the seed will be tested for Seed Mixes 2 through 4. This coating is comprised of an *Azotobacter* sp. mixture which enhances nitrogen fixation and is believed to improve productivity and success rate of the seed.

In the fall of 1996 two additional test plots measuring approximately 60 ft x 40 ft (2,400 sq ft) on the west slope of the embankment were fertilized and seeded, and then covered with tree slash to increase the amount of shade and enhance moisture retention. Plots were not irrigated. Although these test plots were located on a shallower slope than the erosion blankets, the growth around the branches that appeared in the summer of 1997, had all but disappeared by the summer of 1998. Much of the bark and needles was either buried by shifting sands or had blown away, and did not provide the mulch that the addition of straw may have provided.

5.3.2 Mine Site Area

In the summer of 1998, several test plots were established in the open pit and within the waste rock storage area, for purposes of evaluating reclamation specific units (Figure 14).

Test plots were made sufficiently large to incorporate a number of subplots and have been designed to test such variables as soil amendments (fertilizers, sand, wood chips, peat), site preparation, seeding times, seed mixtures, and adaptability of tree seedlings. Successes and failures will provide natural direction to the research, such that the outcome of the selected approach for reclaiming each unit will be predictable.

The first test plots to be developed will consist of four separate areas on the existing waste dump in the vicinity of the mine and mill site. The plots will each be 25 ft and 50 ft in size for a total area of some 5,000 sq ft. Each plot was constructed with 6 to 8 inches of overburden from the existing stockpile. A number of seed mixtures are now being tested in order to optimize the species composition. Plots 1 and 3 were each seeded with Seed Mix No.3, while plots 2 and 4 were each seeded with Seed Mix No.2. It is expected that fertilizers will be necessary over most of the mine area due to low soil nutrients. In order to provide additional nutrients to the soil, each of the plots was fertilized with 16-20-0 fertilizer. Due to the xeric (dry) conditions at the Van Stone mine, some snow seeding will be attempted when there is less than 10 cm of snow cover.

5.3.3 Other Areas

Since experimental information is normally based on small scale optimum conditions, the data acquired from test plots must be applied successfully at a larger scale before they can be deemed applicable. These scale-ups are termed reclamation trials and are normally applied to areas of 2.5 acres to 5 acres in size. If mining is resumed, a series of reclamation trials will be implemented on areas that have been finalized, for example, completed portions of the waste rock storage area, unused exploration roads, and the tailings embankment. Information obtained from reclamation trials can then be scaled-up to reclaim areas as they become available.

Until experimental test plots indicate better results from indigenous species, it is recommended by Grasslands West Co. that Seed Mix No.3 be used in the initial seeding of haul roads and other unclaimed areas, Seed Mix No. 2 be used in the mine and mill site areas, and Seed Mix No.1 (a wetland seed mix) be used in both the open pit littoral area and the tailings pond. These seed mixtures will be tested under a range of conditions in those areas where it is planned to fully

revegetate. Seed mixes will be varied on the basis of research trials for dry and moist sites and on the basis of discussions with government agencies and commercial suppliers.

5.4 Natural Recolonization

It is expected that indigenous ecotypical species of plant will ultimately form the most sustainable vegetation for the Van Stone mine site, in that they are best adapted to the environmental conditions found in the area. Native species are normally more competitive and do better than artificially introduced species once slopes and denuded surfaces have been stabilized and vegetated. Since natural recolonization marks the second stage of succession in the area, documenting the occurrence of recolonization, the specific species involved, and the microclimatic conditions found in areas where natural recolonization occurs, is extremely useful. With this information, the successional process can be accelerated with the addition of seed, fertilizer, and irrigation.

Natural recolonization has already occurred in some areas of the mine site since the operations were suspended and placed under care and maintenance in January 1993. Bullrushes, cattails and other emergent aquatic species have invaded the hydric zone around the tailings area. Kinnikinick, a species of ground cover found in shaded forested areas was noted as expanding their foothold at the forest margin to incorporate the shaded toe of the tailings slopes.

An area at the foot of the erosion blankets (placed in November 1995) was used as a test plot for transplanted kinnikinick. Four patches have grown reasonably well since that time, although the growth rates have not been as robust as found naturally. Some of the areas that were seeded with clover on the west of the mill area now cover, and almost obliterate, some of the road network, and in other areas that contain sufficient organic material.

The success of natural recolonization of disturbed areas will be documented for purposes of identifying indigenous ecotypical species more adaptable to various reclamation units. Species obtained from natural recolonization may be substituted for similar species or added to commercial seed mixtures in test plots and vegetation trials as appropriate, if results are found to be economical and superior. Optimally, indigenous seed mixes will be used, but will be replaced with comparable agronomic mixes when they are not available.

6.0 RECLAMATION UNITS

A Reclamation and Closure Plan has been based on two scenarios:

- metal prices remain depressed and a decision is made to permanently closed the mine, and
- metal prices recover and the economically recoverable ore reserves, and associated waste (2.13 million tons) are mined over an 18 month period.

It is not possible to provide a fixed date for either scenario since they are entirely dependent on metal markets. The current area of mine disturbance (Post 1970), including the open pit, operations area, tailings impoundment, and tailings pipeline is calculated to be 126.6 acres. If operations are not re-opened and the site is to be reclaimed without recovering remaining reserves, the area of disturbance will increase to 134.3 acres. This increase in area is a result of overburden recovery in the area of the tailings impoundment and resloping of the existing waste rock storage area. If mining is to recommence and the remaining open pit reserves mined out, the total area of mine disturbance will increase to 137.5 acres. The increase is due to a further expansion of the waste rock storage area (Table 2).

The following subsections provide an overview description of the procedures required to close each of the main components of the project, and return the area of disturbance to a Mixed Land Use. The entire area of mine disturbance has been subdivided into five Reclamation Units, depending on the reclamation approach and projected end land use. They are:

- open pit,
- waste rock storage area,
- tailings storage facility,
- mill and ancillary facilities, and
- operations area, haul roads and other unclaimed areas.

The mill and ancillary facilities includes the process plant, crushing plant, conveyor system, reagent and fuel storage areas, tailings thickener, and temporary ore stockpiles. A complete set of reclamation plans together with post-closure cross-sections are presented in Figures 14 through 31 for each of the two closure scenarios. These are followed with site revegetation plans in Figures 32 through 35 at the end of this report. A preliminary schedule which is linked to a re-opening decision is presented in Table 3.

Acid generation is not a concern at the Van Stone site. The ore, host rock, open pit wall rock, waste rock, and tailings are derived from a dolomitic limestone, and as a result acid mine drainage does not occur. Eight surface water monitoring sites prescribed by the Washington State Department of Ecology are monitored regularly every 90 days, in accordance with the original waste discharge permit. In addition samples are collected from the tailings pond, open pit, and two monitoring wells located near the tailings area, and submitted for analyses, although one monitoring well is currently dry.

Monitoring data indicates that the water quality of the East Fork of Onion Creek and several unnamed tributaries draining the property is well within Washington State and EPA regulatory standards for drinking water (Routh and Ikramudding, 1996), and open pit water quality has always been well within discharge standards. Thus reclamation of the Van Stone Mine site can be achieved using standard decommissioning and closure procedures.

6.1 Open Pit

The open pit, which is located in the most southern portion of the area of disturbance, is oblong in shape, with an average width of 120 ft, an average length of 317 ft, and a maximum depth of 460 ft. The pit is flooded to an elevation of 3,510 ft or 170 ft above the current pit bottom. The rim of the open pit and portions of the top bench currently support juvenile conifers. The open pit rim will be hand seeded but it is not possible to access the open pit benches with equipment and therefore there will be no attempt to reclaim the area below the pit rim except for an area of potential instability at the southwest end of the pit. Exposed pit walls will not be reclaimed. Any areas that unravel will be left in place to form talus or scree slopes.

The water in the open pit is separated from a tributary to the Northeast Fork of Onion Creek by a narrow rock-fill berm. The water level in the open pit is static at 3,510 ft elevation and excess water seeps through this rock-fill to the adjacent creek. This rock-fill will be removed over a width of 30 ft to form a broad-crested, rock-filled spillway at elevation 3,510 ft, such that any excess water in the open pit will automatically overflow to the adjacent natural drainage.

A hummock of overburden located at the northwest throat of the open pit will be dozed over, recontoured, and spread out along the remaining exposed benches above the open pit water level to create a littoral zone close to lake level. Unless reclamation research shows better results, the littoral zone will be seeded using a recommended Seed Mix No. 2 consisting of bluebunch wheatgrass, slender wheatgrass, Idaho fescue, sheep fescue, mountain brome, yarrow, mountain lupine and rocky mountain penstemon, at a rate of approximately 40 lb/acre, and fertilized as appropriate (400 lb/acre 16-20-0-14). The submerged edge will be planted with bullrush propagules transplanted from the tailings area. Experience has shown that these propagules are opportunistic, taking root over a very short period of time, wherever suitable substrate is available. Cottonwood sapplings may be planted on areas immediately above the waterline.

If the operations are reopened, recoverable overburden from the northwest end of the open pit will be salvaged and stored for a short period of time in a location close to where it can be recovered for use in reclamation of the area, yet sufficiently protected from mining and waste rock disposal operations. As with the current configuration, it will not be possible to access the open pit benches with equipment. Consequently, there will be no attempt to reclaim the area below the pit rim except for an area of potential instability at the southwest end of the pit. As before, the open pit rim will be seeded and the wall rock will be left in place to form a combination of steep cliffs, talus slopes, and scree slides.

The new throat of the open pit will be recontoured down to a littoral area set at 3,510 ft and covered with a layer of overburden salvaged prior to the resumption of mining. The pit will be allowed to re-flood to the level of the spillway (3,510 ft elevation) located in the west end of the pit and the overflow directed to the Onion Creek watershed. Seeding of the littoral area and transplanting of bullrushes along the lake perimeter will be as before.

The final overall appearance of the open pit unit under either closure scenario will be that of a small pothole lake surrounded by steep cliff walls and talus or scree slopes. The perimeter of the open pit will be ringed at the water line with emergent vegetation. The throat of the lake will consist of a grass/shrub covered knoll rolled down to the lake shoreline, and a shallow overflow to the adjacent Onion Creek watershed. Cliffs and ledges, combined with emergent aquatic vegetation will provide a certain amount of bird and waterfowl habitat.

6.2 Waste Rock Storage Area

The existing waste rock storage area was constructed by end dumping to the south along contour from the open pit haul road, has overall slopes ranging from 1.0:1 to 2.0:1. The eastern toe of this waste rock storage area, which consists mostly of larges, is located within less than 100 feet of the Northeast Fork of Onion Creek. Slopes on the north side of the haul road consist, in part, of colluvial overburden. Depth and quantity of overburden available is to be determined.

If a decision is made to permanently close the mine without recovering the known reserves, the majority of the waste rock storage area will be resloped to an angle of 2.5:1, covered with a layer of overburden and seeded as an open land form. The extreme eastern portion of the waste rock storage area, designated Section II on the enclosed drawings, can not be resloped without affecting setbacks and timber immediately adjacent to the toe and the adjacent creek. The slope of this portion of the waste dump is considered stable and it will be left as a scree slope.

Resloping the waste rock storage area will require the removal of timber and topsoil from the toe, and the stockpiling of overburden and subsoils for use in reclaiming the toe of the waste rock storage area almost immediately. A Forest Practices Approval from the Department of Natural Resources will be required to clear the additional area and salvage the overburden below the expanded footprint.

In order to minimise the amount of material that has to be moved to reslope the waste, the first resloping cut will commence in the bed of the main haul road such that fines from the upper portion of the waste rock storage area will be pushed down over the existing toe. The second cut will commence in the overburden above the main haul road, and the salvageable overburden pushed down and spread in shallow layers over the recontoured slopes of 2.5:1 to create a near balanced cut-and-fill. The overall appearance will be curved to ultimately conform to, and blend in with, the contours of the immediate surroundings. Overburden salvaged from under the new footprint will be pushed up over the toe.

The area will be seeded at a rate of approximately 40 lb/acre using a recommended seed mix consisting of Canadian bluegrass, crested wheatgrass, creeping red fescue, hard fescue, perennial rye, creeping bentgrass, and alsike clover. A heavy application of fertilizer (400 lb/acre) accompanied with light irrigation is recommended.

If the operations are re-opened it will not be necessary to reslope the existing waste. The existing waste rock storage area will be extended outward at a closure angle of 2.5:1 over a currently

timbered area. Before extending the waste rock storage area, these trees will be removed and given over as salvaged to the licenced timber holders. Top soil, including root wads and other organics, will be windrowed behind a buffer strip paralleling the creek for use in reclaiming the waste once mining ceases. Overburden and subsoils will be windrowed in front of the topsoil and used to cover the waste first.

The surface of the waste will be contoured to imitate the surrounding terrain, and the crest will be rolled over at completion to avoid concentration of runoff and to imitate a natural overall appearance to the extent possible. The surfaces will then be covered to a depth of approximately 12 in, with topsoil and overburden salvaged from the footprint of the dump and from overburden salvaged from the north side of the open pit haul road. Large boulders and tree stumps recovered from grubbing the footprint will be placed to provide wildlife cover until vegetation is well established.

Seed selection for reclamation purposes will be determined from test plots to optimize mixtures for best growth and longevity. Unless reclamation research shows better results, the waste rock storage area will be seeded at a rate of approximately 40 lb/acre using a recommended seed mix consisting of Canadian bluegrass, crested wheatgrass, creeping red fescue, hard fescue, perennial rye, creeping bentgrass, and alsike clover. The area will be fertilized (400 lb/acre) at application rates recommended by Grasslands West or as derived from reclamation test plots and irrigated as appropriate. The area may also be replanted using commercial reforesters or hand planted using nursery grown saplings.

The ultimate overall appearance of the waste rock storage unit under either closure scenario will be that of open space, rolling grassland, with the potential for reforestation, with a small portion at the eastern end consisting of talus or scree slope.

6.3 Tailings Storage Facility and Associated Seepage Pond

6.3.1 Tailings Embankment

The tailings embankments consist of steep sided erodable tailings sands. In some locations the slopes are heavily rilled, particularly along the south and west faces. Although the slopes are difficult to reclaim due to a number of factors, including lack of nutrients, xeric conditions, erodable materials, and steepness of slopes, trial test plots using biodegradable erosion blankets; one of woven coconut and the other of straw/coconut mix, treated with 50 lbs of commercial fertilizer and 40 lb of Seed Mix No.4, produced encouraging results as much as 4 years after application, despite the fact that they were poorly installed, not irrigated, not re-fertilized, or otherwise maintained since they were first established.

The use of biodegradable erosion blankets in this particular situation appears to offer the best means of establishing a permanent vegetative cover over the outer slopes of the tailings embankments. However, long-term success will depend primarily on the degree of site

preparation, the care given to installation, and the amount of follow-up maintenance afforded, until a self-sustaining vegetative cover is established.

The main site preparation requirements are erosion control and slope grooming. Most of the embankment face is deeply rilled from runoff from the upper bench. In some cases accumulated runoff follows the access road along grade until it ponds and finds a location where it overflows the embankment creating sizable gullies. Before the outer face of the tailings embankment can be groomed to accept the biodegradable erosion blankets, the upper bench has to be regraded to direct runoff to one of two rock-lined swales and down the outer face in rock-lined channels.

Once runoff control facilities have been installed, the outer faces of the tailings embankment will be groomed to accept the biodegradable erosion blankets. It is not possible to reduce the angle of these slopes. They form the main confining embankments for the tailings containment area. The slopes are long and difficult to access with conventional equipment. A dozer can safely negotiate its way down the slope but can not return without returning via the access road; a long and torturous route under these circumstances.

Various schemes have been evaluated that involve rakes and I-beams that can be mechanically dragged over the slopes, either singly or in combination, using one or more dozers situated on the upper bench. All of the schemes appear practical, however, any mechanism that produces a smooth even slope will be acceptable, provided the erosion control blankets can be laid in intimate contact with, and fastened to, the embankment face.

The tailings sands are essentially devoid of macronutrients. Seed and an appropriate strength of fertilizer will be applied as an emulsion together with a tackifier (wood fibre) by hydroseeding. A seed mix consists of Canadian bluegrass, tall wheatgrass, bluebunch wheatgrass, slender wheatgrass, hard fescue, mountain brome, annual rye, perennial rye, small burnett, alsike clover, white dutch clover, and yellow blossom sweet clover, at an application rate of 80 lb/acre, is recommended.

In order to ensure success, installation of the erosion control blankets require a relatively high degree of quality control. The upper edge of the blanket must be properly keyed into the upper bench, well anchored using wire staples at appropriate spacing down the slope, and held in close contact with the underlying sand surface. The main concern is ensuring that runoff soaks through to, and is absorbed by, the underlying sands, and is not allowed to form rivulets or otherwise re-initiate the erosion process. From the test trials it is also apparent that the seeded slopes require irrigating during mid-summer and follow-up applications of fertilizer to ensure that vegetation reaches a self-sustaining state.

The final appearance of the outer embankments will be that of grass slopes bounded by forested buffer strips to the north. It is expected that some of the slopes will be gradually recolonized by conifer seedlings and kinnikinick ground cover where conditions allow.

6.3.2 Tailings Pond

The tailings surface can be reclaimed using standard reclamation techniques. A rock-lined spillway (Invert Elevation 2694 feet) and discharge channel has been installed in the extreme northeast corner of the main tailings impoundment to direct any excess accumulated rainwater to the adjacent drainage. Tailings area water quality is monitored on a regular basis (every 90 days) and is reported to be suitable for discharge under the Water Discharge Permit or can be used for irrigation purposes. Two additional rock-lined spillways will be located in the dividing wall between the east and west tailings basins to direct any excess runoff from the West Basin into the East Basin. The depth of all three spillways would be set at an elevation (Invert Elevation 2694 feet) to establish a fixed water level in combination with exposed tailings beaches within each of the two tailings basins. All three spillways would be closed to increase the storage capacity should mining be resumed.

This would allow for the development of two gradually sloping meadows leading down to permanent wetlands, more commonly called a wetlands complex. Currently, the zone of saturation in the south impoundment is demarcated by a stand of bullrushes extending from a point below the water level up the tailings beach to approximately 1 ft above the water level, and supports the contention that the tailings surface is amenable to being reclaimed as a viable wetland ecosystem.

A 6 to 8 in layer of overburden from the East Meadow stockpile will be spread over the exposed tailings surface down to a point as close as possible to the zone of saturation or to the maximum extent where equipment can operate. Alternatively, overburden will be placed on the inside of the tailings embankment and pushed into place using dozers or backhoes with the assistance of timber pads. The outer and central embankments will be resloped toward the centre of each impoundment. Where possible the zones of emergent vegetation will be retained.

Unless test plot data indicates otherwise, the overburden layer and recontoured outer slopes will be seeded with a combination of dry and wetland seed mix compatible with indigenous plant communities at application rates of approximately 25 lb/acre. The wetland seed mix is comprised of redbud, meadow foxtail, tufted hairgrass, American sloughgrass, northwest manna grass, fowl bluegrass, wool bullrush, Nebraska sedge, soft rush, and small fruited bullrush. Formula No. 2 fertilizer, used for rice patties, is recommended.

If the operations are re-opened, the proposed closure plan would be essentially the same. The low spots in the outer embankment would be raised, as required, by about 1 ft to a consistent level of 2700 ft. The spillway in the northeast corner of the outer embankment will be closed and the invert elevations of the spillway(s) in the central berm will be raised to elevation 2697 ft. The deposition of tailings in the West Basin will commence from the southwest toward the spillway in the northeast corner. The tailings surface will form a gradual slope of approximately 1/2% driving the supernatant pond ahead of it toward the northeast spillway, forming a shallow pond. Excess supernatant will overflow from the West Basin to the East Basin.

Once the tailings surface reaches its maximum level in the West Basin, the tailings deposition system will be moved to the southwest corner of the East Basin. Tailings deposition in the East basin will commence from an elevation of 2698 ft form a gradual slope of approximately ½% toward the supernatant reclaim pond in the northeast corner. Once operations cease, and the water quality in the supernatant pond reverts to essentially rainwater, the spillway in the northeast embankment would be re-established at an invert elevation of 2697 ft, thereby forming a second shallow pond in that location.

This closure scenario again allows for the development of two gradually sloping meadows leading down to two permanent wetlands. As in the previous scenario, the area adjacent to the ponds will be planted with bullrush propagules, and a 6 to 8 in layer of overburden from the East Meadow stockpile will be spread over the exposed tailings surface down to a point as close as possible to the zone of saturation. The central berm will be resloped slightly toward the centre of each impoundment, and the entire area seeded and fertilized.

Under either scenario, the final appearance of the tailings surface will be that of grassy meadows gradually sloped to two shallow complexed wetland ecosystems.

6.3.3 Seepage Ponds

The seepage pond adjacent to the tailings facility will be dewatered, the confining embankments dismantled, recontoured and seeded with Mix No. 2, and reforested with a mixture of indigenous conifers and deciduous trees.

6.4 Process Plant and Ancillary Facilities

All surface facilities at the site, such as the mill, office, shops, and ancillary facilities are currently under care and maintenance. They will remain closed until a decision is made to either re-open the operations or close them permanently.

In either case, once the mine is deemed closed, all equipment, including building shells, milling equipment, crushers, and conveyor systems will be sold for salvage value. Non-salvageable materials will be burned, removed to the county landfill, or buried in the waste rock storage area.

Any surplus reagents and laboratory chemicals remaining will be removed from site using licensed contract services.

All tanks and fuel storage facilities will be emptied of their contents before they are removed from their foundations. Tank residues will be transferred by a proven and reputable waste oil reprocessing company and/or Special Waste recycling company, as appropriate.

The area taken up by the mill and ancillary facilities is, relatively speaking, quite small. Concrete foundations would be broken down to ground level and covered with a layer of overburden, seeded with a grass seed mix, planted with ecotypically compatible species of conifer, fertilized, and returned to forest lands.

6.5 Site Access, Haul Roads, and Miscellaneous Areas

The main access road from the junction with the public road system to the mine site (5 miles) will not be reclaimed since it serves a number of public, private, and commercial interests other than the Van Stone Mine. Boise Cascade Forest District has easement over the road to access their timber holdings, as does Washington Water Power for access to a substation located on mine property. There are residences near the road junction and the Washington State Department of Natural Resources uses the road for fire control. The tailings line will be dismantled, picked-up, and disposed of as appropriate.

The operations area covers an area of approximately 41.7 acres. The total road area within the operations area, including haul roads, is estimated to cover an area of 5.25 acres. All roads to be reclaimed will be ripped and scarifying with a dozer. These areas will be resloped, cut-banks will be regraded, and the general area will be recontoured to minimize erosion. Miscellaneous waste and low grade ore will be deposited in the main waste rock storage area. Culverts will be removed, and ditches and cross drainage will be upgraded and reinforced with rip-rap where necessary. Compacted surfaces will be ripped, scarified, or roughed-up using a dozer. Each area will be hand seeded with a grass seed mix, planted with ecotypically compatible species of conifer, hand fertilized, and returned to forest lands.

7.0 RECLAMATION AND CLOSURE STRATEGY

The development of a long-term strategy for Closure has been hampered by the current downturn in metal prices since recovery of the remaining reserves depends entirely on achieving an economic balance between mining costs and smelter returns. The recovery of remaining reserves would become uneconomical if full closure is implemented immediately. Reclaiming the tailings area, for example, would render any resumption of operations totally uneconomical if a new tailings impoundment had to be constructed.

This Reclamation and Closure Plan adopts a "Post Mining Reclamation" approach to reclaiming areas affected by mining for both possible eventualities. Alternative approaches, such as "Concurrent, Progressive, and Segmental" approaches to reclamation are either not applicable, since the operations are now closed, or are impractical, since much of the existing infrastructure may be required in the future to accommodate the mining of remaining reserves.

In order to retain the viability of various options, the overall approach to reclamation and closure has been a cautious one. The operations have been placed under care and maintenance until such time as the economics support or obviate a decision to either close the mine permanently or resume operations until all known reserves have been mined. The known remaining reserves would take approximately 18 months to mine. Initiatives over the interim are those that are designed to advance the reclamation and closure program to a point of readiness without jeopardising or interfering with potential future operations. As such, the program has focused on stabilizing exposed surfaces from erosion, sourcing and stockpiling overburden, and continuing reclamation research programs.

The primary differences between the two closure scenarios are as follows:

- increased area of disturbance (126.6 acres vs 137.5 acres),
- addition of overburden borrow (East Meadow, Waste Rock Storage Area)
- increased size of open pit,
- increase in the size of the waste rock storage area,
- increased volume of tailings.

Under either scenario, mine closure and site reclamation would be carried out as set out in the foregoing subsections. The operations area will be subdivided in to 5 main reclamation units depending on the reclamation approach and projected end land use. Concurrently, the operations will continue to evaluate the results from a broad range of research initiatives.

However, there is little difference in the overall approach and strategy. Under both closure scenarios, the objective will be to reduce the angle of waste rock storage area to slopes of 2.5:1, to the extent possible given topographic restraints, and to provide a layer of growth medium suitable of supporting a grass cover. Similarly, the approach under both closure scenarios is to stabilize and revegetate the outer slopes of the tailings impoundment and convert the interior of the tailings impoundment to a mixed wetlands complex. The open pit will be closed as a pothole lake surrounded by steep cliff-like faces and talus/scree slopes, while the main operations area will be returned to forest use.

A post-reclamation environmental monitoring program will be initiated on closure and will include geotechnical, water quality and biological components necessary to ensure that the proposed goals and objectives are achieved as planned.

8.0 RECLAMATION METHODOLOGY

The following subsections provide a broad overview of the methods that will be employed during all phases of reclamation but it is expected that they will be modified in accordance with experience gained from the field and results obtained from test plots.

8.1 Site Preparation

All sites will require some form of preparation to provide a suitable environment for seeding or transplanting.

Areas of compacted rock and overburden mixtures are normally the most difficult to prepare and will require scarifying to a depth of between 8 to 12 inches using heavy equipment. Ripping to depths of 18 to 24 inches may be required in heavily compacted areas such as haul roads. Compacted surfaces can normally be "roughed up" with a bulldozer equipped with multiple rippers.

Areas used for storage of waste rock will be recontoured to an overall slope of 2.5:1 in order to integrate their sharp relief into the surrounding terrain (except in one location where

topographical constraints preclude resloping), and covered with a 6 to 8 inch layer of overburden. The toe of the waste rock storage area, under either scenario will have to be logged, grubbed, and stripped, and the soils and overburden stockpiled, before resloping starts.

The outer embankments of the tailings area are constructed of highly erodable sands. A number of measures, including some regrading of the upper benches and construction of rock-lined swales are required to collect, convey, and divert surface runoff from these slopes to adjacent drainage, before the outer embankments can be revegetated. Measures, such as rock-lined spillways and overflow channels will also be required to fix pond levels within the tailings impoundments at predetermined elevations.

The outer embankments of the tailings area are steep and heavily rilled. Slopes on the south, west, and north will require grooming before they can be hydroseeded and overlain with biodegradable erosion control blankets.

8.2 Growth Media and Soil Amendments

In order to ensure successful growth, plants require, as a minimum, a growth medium that allows for root penetration, adequate moisture retention, and nutrients. Wherever possible, overburden, obtained from the East Meadow, mine site stockpile, open pit stripping, and waste rock storage area footprint, will be stockpiled for use in reclamation. An growth medium (soil) budget is given in Table 4

The depth of material required to provide rooting depths for grass cover and yet still retain soil moisture is in the order of 6 to 8 inches. There are currently sufficient sources of overburden (subsoils) in the mine site overburden stockpile and open pit perimeter to provide the necessary cover over the waste rock and open pit littoral areas, respectively. Sufficient sources of overburden (subsoils) have been identified in the East Meadow to cover the surface of the tailings impoundment. The outer embankments of the tailings impoundment will be treated separately.

Although the overburden contains some nutrients, the tailings sands are essentially devoid of any nutrient content. All reclaimed areas will require fertilizing. As a general practice, agricultural grade 16-20-0-14 should be applied at a rate of 400 lbs/acre to all areas that are to be reclaimed, except the tailings surfaces. The tailings sands contain little or no potassium but reasonable levels of sulphur. As a general practice, tailings surfaces should be treated with agricultural grade 14-19-19-0 fertilizer at a rate of 200 lbs/acre. In all cases, reclaimed areas will require repeated treatments until vegetation is well established.

The outer embankments of the tailings impoundments are subjected to dessication. In addition to the erosion control blankets, the outer embankments will require periodic irrigation to sustain plant growth. The amount of irrigation must be carefully controlled to ensure that the surface below the erosion control blankets does not become saturated, or trigger the erosion process. Repeated seedings of denuded areas, and repeated applications of fertilizer should be expected.

8.3 Species Selection and Application Methods

Until experimental test plots indicate better results from indigenous species, recommended seed mixes as presented in Table 1. These may be varied on the basis of research trials, discussions with regulatory agencies, commercial suppliers, and experience from similar environments. Application rates of 40 lb/acre are recommended, and some areas may require repeated seeding.

Although hand held cyclone seeders are regarded as the most appropriate method for broadcasting seed in most of the areas, it is recommended that a seed be applied to the outer embankments of the tailings area, together with fertilizer and a tackifier as an emulsion with the use of a hydroseeder, since the outer embankments are relatively steep and inaccessible.

In general seeding will be carried out in the late fall, after the dry season, after the earthworks have been completed in the dry season, and after migratory birds have departed the area. Due to the dry (xeric) climate in the Van Stone area, it may be more appropriate to attempt snow seeding when there is less than 4 in of snow cover. Planting immediately following snowmelt may result in too short a germination period for propagation to be successful. A late fall planting allows seeds to overwinter with germination stimulated as early as possible the following spring when seeds can take advantage of lengthening daylight, optimum soil moisture conditions, and warming temperatures.

Reforestation will be carried out in during late winter, during their period of dormancy, or immediately following snow melt. Coniferous species will be obtained from local commercial nurseries to ensure ecotype compatible stock. Deciduous species such as paper birch and trembling aspen are ideal regeneration species and will be obtained from specialised commercial nurseries or propagated on site from roots, cuttings, or seedlings.

Planting will be done by hand in a random or staggered pattern using either Equinox staff or using contract reforesters. Average planting densities will be 3000 stems/acre based on the basis of a 9 ft centre spacing, in those areas that are to be reforested.

9.0 RECLAMATION MONITORING, FACILITIES AND STAFF

The proposed reclamation research program and annual reclamation initiatives will be undertaken by Equinox staff, augmented where required with the advice of consultants, reclamation specialists, agronomists, horticulturists, silviculturist, soils laboratories, seed and fertilizer suppliers, and reforestation companies. In this way, Equinox staff will be able to retain the practical knowledge in-house required to reclaim this particular property.

Seeding and fertilizing will be carried out under the direction of site personnel using site facilities equipment to the extent possible. The services of local contractors, professional nurseries, or commercial reforesters will be used where appropriate. In addition to the equipment that the mine may have available, it is anticipated that reclamation may require the periodic use of backhoes, dozers, dump trucks, and agricultural equipment such as a hydroseeder, harrows, ploughs and/or discs which can be rented or obtained by contracting out. Smaller, less expensive

equipment, such as hand-held cyclone seeders and small tools will be rented for such purposes. Site staff will be responsible for the post-closure monitoring of surface and ground water quality, plant growth, ongoing reclamation requirements, and wildlife habitat use.

10.0 RECLAMATION CAPITAL COST ESTIMATE

Post-closure reclamation costs have been calculated for two scenarios; closure without recovery of known ore reserves, and closure following an 18-month period of mining. Cost estimates are summarized below and are presented in detail in Tables 5 and 6.

Option A: Closure without Recovery of Known Reserves Cost

Reclamation Research \$ 25,660

Annual Reclamation

Pit Wall	10,000
Tailings Embankment	118,172
Haul Roads & Other Unclaimed Areas	95,513

Post Closure Reclamation

Open Pit	17,554
Tailings Diversion/Piping	16,712
Tailings Pond	14,324
Waste Rock Dump	30,230
Mill Site	16,164

Total	\$ 344,329
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Option B: Closure Following Recovery of Known Reserves Cost

Reclamation Research \$ 25,660

Annual Reclamation

Pit Wall	10,000
Tailings Embankment	118,172
Haul Roads and Other Unclaimed Areas	87,175

Post Closure Reclamation

Open Pit	32,807
Tailings Diversion/Piping	16,712
Waste Rock Dump	94,105
Mill Site	16,164

Total	\$ 415,118
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TABLES

**EQUINOX RESOURCES (WASH) INC.
VAN STONE MINE**

**Table 1
Suggested Seed Mixes For Reclamation Test Plots**

Native Species		COMMERCIAL SEED SUPPLIERS			
		Mix No.1	Mix No.2	Mix No.3	Mix No.4
		Wetland %	Native %	Hearty %	Tallings %
Redtop	<i>Agrostis alba</i>	30			
Meadow foxtail	<i>Alopecurus pratensis</i>	20			
Tufted hairgrass	<i>Deschampia caespitosa</i>	10			
American sloughgrass	<i>Beckmannia syzigachne</i>	10			
Northwest mannagrass	<i>Glyceria borealis</i>	10			
Canadian bluegrass	<i>Poa compressa</i>			10	5
Fowl bluegrass	<i>Poa palustris</i>	10			
Wool bullrush	<i>Scirpus cyperinus</i>	2.5			
Nebraska sedge	<i>Carex nebraskensis</i>	2.5			
Soft rush	<i>Juncus effusus</i>	2.5			
Small fruited bullrush	<i>Scirpus microcarpus</i>	2.5			
Siberian wheatgrass	<i>Agropyron sibiricum</i>				10
Tall wheatgrass	<i>Agropyron elongatum</i>				10
Bluebunch wheatgrass	<i>Agropyron spicatum</i>		20		10
Slender wheatgrass	<i>Agropyron trachycaulum</i>		20		
Crested wheatgrass	<i>Agropyron cristatum</i>			10	
Creeping red fescue	<i>Festuca rubra</i>			20	
Hard fescue	<i>Festuca longifolia</i>			20	12.5
Idaho fescue	<i>Festuca idahoensis</i>		10		
Sheep fescue	<i>Festuca ovina</i>		20		12.5
Mountain brome	<i>Bromus marginatus</i>		20		10
Annual rye	<i>Lolium multiflorum</i>				20
Perennial rye	<i>Lolium perenne</i>			20	
Creeping bentgrass	<i>Agrostis stolonifera</i>			10	
Small burnett	<i>Sanguisorba minor</i>				2.5
Yarrow	<i>Achillea millefolia</i>		2		
Mountain lupine	<i>Lupinus alpestris</i>		5		
Rocky mountain penstemon	<i>Penstemon rydbergii</i>		3		
Alsike clover	<i>Trifolium hybridum</i>			10	2.5
White dutch clover	<i>Trifolium repens</i>				2.5
Yellow blossom sweet clover	<i>Mellilotus officinalis</i>				2.5

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Suggested Fertilizer Formulas For Reclamation Test Plots

Formula #	Application and Rate		Composition (N-P-K-S)
1	Dryland	400 lbs/acre	16-20-0-14
2	Wetland	200 lbs/acre	14-19-19-0

**EQUINOX RESOURCES (WASHINGTON) INC.
VAN STONE MINE**

**Table 2
Reclamation Units and Area of Disturbance**

RECLAMATION UNIT	Area of Disturbance		
	Existing Area of Disturbance (acres)	Without Additional Mining (acres)	Following Additional Mining (acres)
Open Pit (Combined Pre- and Post 1970 Disturbance)	26.3	26.3	27.8
Tailings Storage Facility (Including Overburden Stockpile)	44.2	47.1	47.1
Waste Rock Storage Area (Including Resloping)	5.8	10.6	12.3
Operations Area (Including Haul Roads)	41.7	41.7	41.7
Plant and Ancillary Facilities (Including Tailings Line)	8.6	8.6	8.6
Total Estimated Disturbed Area	126.6	134.3	137.5

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**EQUINOX RESOURCES (WASH) INC.
VAN STONE MINE**

Table 3
**Conceptual Reclamation and Closure Schedule
For Closure Without Additional Mining or Following Additional Mining**

UNIT CODE	RECLAMATION UNIT	POST CLOSURE							
		YEAR-1	YEAR-2	YEAR-3	YEAR-4	YEAR-5	YEAR-6	YEAR-7	YEAR-8
0000	DECISION POINT								
1000	ADMINISTRATION								
1001	Permitting and Contract Administration								
1002	Reclamation Research Program								
1003	Post Closure Monitoring								
2000	TAILINGS IMPOUNDMENT								
2001	Sourcing, Testing, and Stockpiling Overburden (Sobsoils)								
2002	Installation of Spillways								
2003	Runoff Control Systems and Stabilization of Outer Embankments								
2004	Outer Embankment Grooming, Hydroseeding,								
2005	Outer Embankment Erosion Control Blankets								
2006	Placement of Overburden, Surface Seeding, and Fertilizing								
2007	Repeat Seeding and Fertilizing								
3000	OPEN PIT								
3001	Installation of Spillway								
3002	Recontouring Knoll Area and Littoral Area								
3003	Seeding and Fertilizing (Planting Bulrushes)								
3004	Repeat Seeding and Fertilizing								
4000	WASTE ROCK STORAGE AREA								
4001	Stripping, Grubbing, and Stockpiling Overburden From Toe								
4002	Resloping and Capping with Overburden								
4003	Seeding, and Fertilizing								
4004	Repeat Seeding and Fertilizing								
5000	OPERATIONS AREA								
5001	Recontouring, Upgrading Site Drainage								
5002	Resloping, Scarifying, and Capping with Overburden								
5003	Seeding, Fertilizing, and Planting								
5004	Repeat Seeding and Fertilizing								
6000	MILL SITE AND TAILINGS LINE								
6001	Removal of Tailings Line								
6002	Removal of Hazardous Materials								
6003	Dismantling and Disposal of Equipment and Building Shells								
6004	Destruction of Foundations								
6005	Ripping, Scarifying, and Capping								
6006	Seeding, Fertilizing, and Planting								
6007	Repeat Seeding and Fertilizing								

L:\HALLAMH3172VANSTONE\SCHED.XLS

**EQUINOX RESOURCES (WASH) INC.
VAN STONE MINE**

**Table 4
Preliminary Soil (Overburden) Budget**

Location	Soil Requirements (yd ³)	Source	Quantity Available (yd ³)	Soil (Overburden)	
				Cum. Deficite (yd ³)	Cum. Excess (yd ³)
Tailings Area Surface	36,700	East Meadow	36,700	0	0
Waste Rock Storage Area	11,200	Toe Salvage	2,500	0	0
		Brow Salvage	2,500	0	0
		East Stockpile	6,200	0	43,800
Open Pit	8,900	Open Pit Throat	3,000	0	0
		East Stockpile	5,900	0	37,900
Operations Area	10,000	East Stockpile	10,000	0	27,900
Total	66,800	Stockpiles	66,800	0	27,900

EQUINOX RESOURCES (WASH) INC.
VAN STONE MINE
TABLE 5
PRELIMINARY RECLAMATION COST ESTIMATE
Option A - Based on Current Conditions
Detailed Cost Estimate

ACTIVITY DESCRIPTION	UNITS	QUANTITY	UNIT COST	TOTAL COST
RESEARCH				
Open Pit Perimeter Soil Characterization	each	4	180.00	720
Open Pit Perimeter Test Plots	L.S./year	5	100.00	500
Stabilization of Open Pit Wall Test Plots	L.S./year	5	100.00	500
Littoral Zone (O/B) Soil Characterization	each	2	180.00	360
Open Pit Littoral Zone Test Plot	L.S./year	5	100.00	500
Tailings Perimeter Test Plots	L.S./year	5	100.00	500
Tailings Embankment Test Plots	L.S./year	5	100.00	500
Tailings Pond Test Plots	L.S./year	5	100.00	500
Mill Site Soil Characterization (incl haul roads & other unclaimed areas)	each	4	180.00	720
Mine Mill Site Test Plots	L.S./year	5	100.00	500
O/B Stockpile Soil Characterization	each	2	180.00	360
Environmental Co-ordinator	L.S./year	4	5,000.00	20,000
Sub-total				25,660
ANNUAL RECLAMATION				
PIT WALL				
Stabilization of Pit Wall	L.S./year	1	10,000.00	10,000
Sub-total				10,000
TAILINGS EMBANKMENT				
Recontouring South Embankment in Prep. for Erosion Blankets	acre	3.122	1,500.00	4,683
Excavate, Load, Long Haul, Dump, Spread, Compact Overburden	cu. yd	18222.6	5.00	91,113
Erosion Blankets	sq.yd	15111.11	0.61	9,218
Seeding/Fertilizing Diversions (including labour)	acre	3.2197	129.70	418
Seeding/Fertilizing Embankments (including labour)	acre	19.368	582.00	11,272
Purchase Electric Broadcaster	L.S.		500.00	500
Follow-up Fertilization Diversions	acre	3.2197	30.00	97
Follow-up Fertilization Embankments	acre	19.368	45.00	872
Sub-total				118,172
HAUL ROADS AND OTHER UNCLAIMED AREAS				
Scarifying and Recontouring	acre	20.88	1,500.00	31,320
Stockpile Relocation	L.S.		2,500.00	2,500
Excavate, Load, Short Haul, Dump, spread, Compact Overburden	cu.yd.	13189	3.60	47,480
Seeding/Fertilization	acre	20.88	134.70	2,813
Tree Planting	acre	20.88	516.00	10,774
Follow-up Fertilization	acre	20.88	30.00	626
Sub-total				95,513
OPEN PIT				
Recontouring Overburden Pit Rim (including installation of end berm)	acre	7.5413	1,850.00	13,951
Seeding/Fertilizing Pit Rim	acre	7.5413	353.90	2,669
Construct Littoral zone	acre	0.3214	1,500.00	482
Planting/Fertilizing of Emergent Vegetation along Flooded Edge	acre	0.3214	702.25	226
Follow-up Fertilization	acre	7.5413	30.00	226
Sub-total				17,554
TAILINGS DIVERSION / PIPING				
Excavation and Removal of Piping	L.S.	1	10,500.00	10,500
Surface Recontouring	acre	3.8	1,500.00	5,700
Seeding/Fertilizing of pipeline	acre	3.8	134.70	512
Sub-total				16,712
TAILINGS POND - WETLAND DEVELOPMENTS				
Excavate, Load, Long Haul, Dump, spread, Compact Overburden	cu.yd.	1497	5.00	7,485
Seeding/Fertilizing of Perimeter	acre	1.856	129.70	241
Follow-up Fertilization	acre	1.856	30.00	56
Seeding/Fertilizing of Wetted Area	acre	14.906	408.95	6,096
Follow-up Fertilization	acre	14.906	30.00	447
Sub-total				14,324
WASTE ROCK FACILITY				
Surface and Bench Crest Recontouring	acre	5.8	1,850.00	10,730
Excavate, Load, Short Haul, Dump, Spread, Compact Overburden	cu.yd.	4678.67	3.60	16,843
Seeding/Fertilizing Top Surface and Benches	acre	5.8	428.00	2,482
Follow-up Fertilization	acre	5.8	30.00	174
Sub-total				30,230
MILL SITE REVEGETATION				
Scarifying and Recontouring	acre	8.58	1,500.00	12,870
Seeding/Fertilization	acre	8.58	353.90	3,036
Follow-up Fertilization	acre	8.58	30.00	257
Sub-total				16,164
TOTAL				344,329

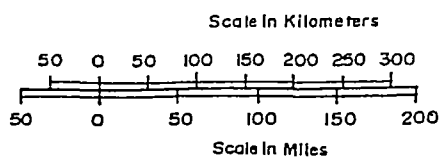
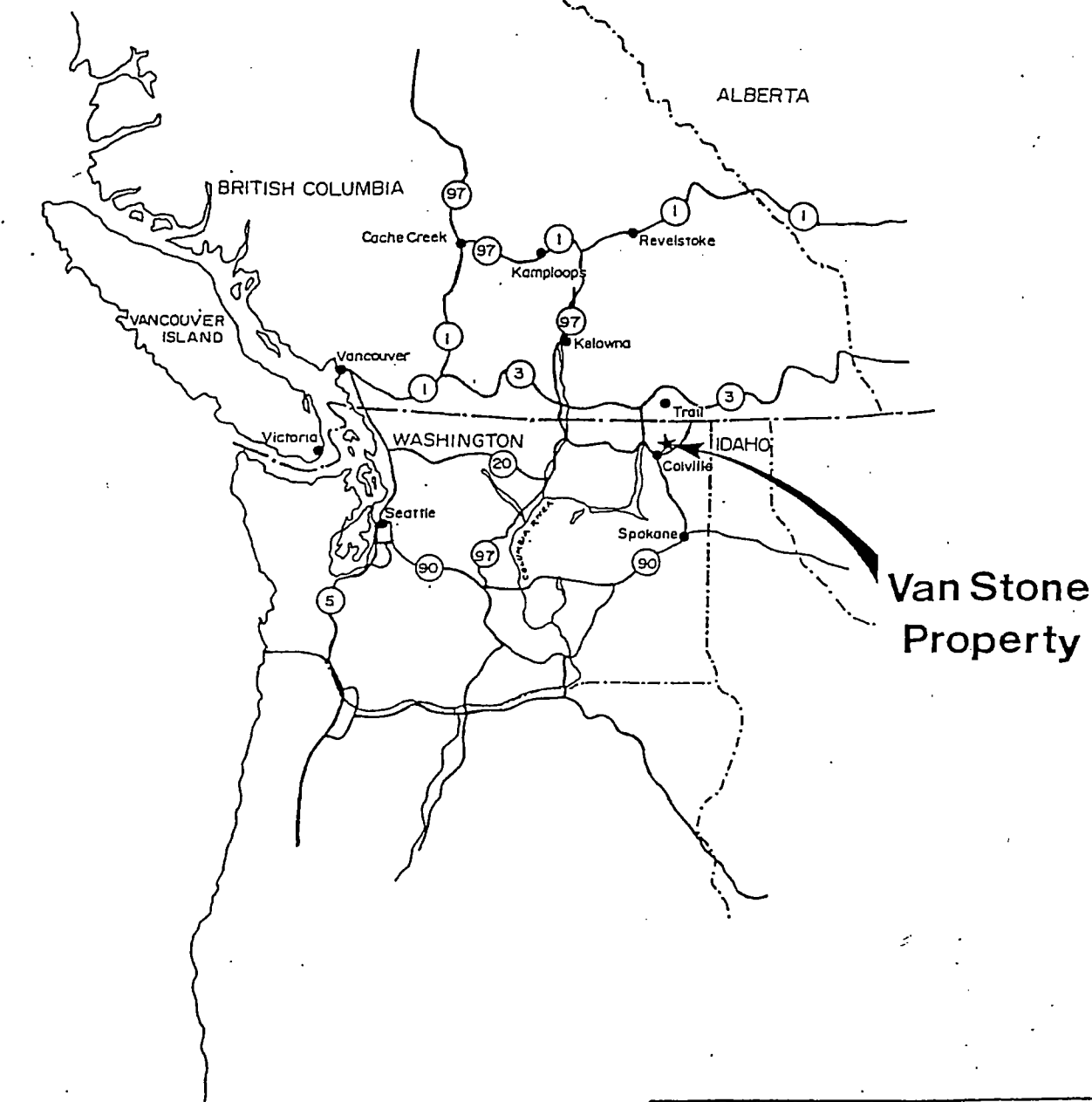
Note: Overburden will be applied to 50% of area and no overburden applied to roads

EQUINOX RESOURCES (WASH) INC.
VAN STONE MINE
TABLE 6
PRELIMINARY RECLAMATION COST ESTIMATE
Option B - Based on Current Conditions
Detailed Cost Estimate

ACTIVITY DESCRIPTION	UNITS	QUANTITY	UNIT COST	TOTAL COST
RESEARCH				
Open Pit Perimeter Soil Characterization	each	4	180.00	720
Open Pit Perimeter Test Plots	L.S./year	5	100.00	500
Stabilization of Open Pit Wall Test Plots	L.S./year	5	100.00	500
Littoral Zone (O/B) Soil Characterization	each	2	180.00	360
Open Pit Littoral Zone Test Plot	L.S./year	5	100.00	500
Tailings Perimeter Test Plots	L.S./year	5	100.00	500
Tailings Embankment Test Plots	L.S./year	5	100.00	500
Tailings Pond Test Plots	L.S./year	5	100.00	500
Mine Mill Site Soil Characterization (incl haul roads & other unclaimed areas)	each	4	180.00	720
Mine Mill Site Test Plots	L.S./year	5	100.00	500
O/B Stockpile Soil Characterization	each	2	180.00	360
Environmental Co-ordinator	L.S./year	4	5,000.00	20,000
Sub-total				25,660
ANNUAL RECLAMATION				
PIT WALL				
Stabilization of Pit Wall	L.S./year	1	10,000.00	10,000
Sub-total				10,000
TAILINGS EMBANKMENT				
Recontouring South Embankment in Prep. for Erosion Blankets	acre	3.122	1,500.00	4,683
Excavate, Load, Long Haul, Dump, Spread, Compact Overburden	cu. yd	18222.6	5.00	91,113
Erosion Blankets	sq.yd	15111.11	0.61	9,218
Seeding/Fertilizing Diversions (including labour)	acre	3.2197	129.70	418
Seeding/Fertilizing Embankments (including labour)	acre	19.368	582.00	11,272
Purchase Electric Broadcaster	L.S.		500.00	500
Follow-up Fertilization Diversions	acre	3.2197	30.00	97
Follow-up Fertilization Embankments	acre	19.368	45.00	872
Sub-total				118,172
HAUL ROADS AND OTHER UNCLAIMED AREAS				
Scarifying and Recontouring	acre	19.24	1,500.00	28,860
Stockpile Relocation	L.S.		2,500.00	2,500
Excavate, Load, Short Haul, Dump, spread, Compact Overburden	cu.yd.	11,866.07	3.60	42,718
Seeding/Fertilization	acre	19.24	134.70	2,592
Tree Planting	acre	19.24	516.00	9,928
Follow-up Fertilization	acre	19.24	30.00	577
Sub-total				87,175
OPEN PIT				
Recontouring Overburden Pit Rim (including installation of end berm)	acre	7.5413	1,850.00	13,951
Seeding/Fertilizing Pit Rim	acre	7.5413	353.90	2,669
Construct Littoral zone	acre	7.35	1,500.00	11,025
Planting/Fertilizing of Emergent Vegetation along Flooded Edge	acre	7.35	702.25	5,162
Follow-up Fertilization	acre	7.35	30.00	221
Sub-total				33,027
TAILINGS DIVERSION / PIPING				
Excavation and Removal of Piping	L.S.	1	10,500.00	10,500
Surface Recontouring	acre	3.8	1,500.00	5,700
Seeding/Fertilizing of pipeline	acre	3.8	134.70	512
Sub-total				16,712
TAILINGS POND - WETLAND DEVELOPMENT				
Excavate, Load, Long Haul, Dump, spread, Compact Overburden	cu.yd.	1497	5.00	7,485
Seeding/Fertilizing of Perimeter	acre	1.856	129.70	241
Follow-up Fertilization	acre	1.856	30.00	56
Seeding/Fertilizing of Wetted Area	acre	14.906	408.95	6,096
Follow-up Fertilization	acre	14.906	30.00	447
Sub-total				14,324
WASTE ROCK FACILITY				
Surface and Bench Crest Recontouring	acre	18.16	1,850.00	33,596
Excavate, Load, Short Haul, Dump, Spread, Compact Overburden	cu.yd.	14,649.07	3.60	52,737
Seeding/Fertilizing Top Surface and Benches	acre	18.16	428.00	7,772
Follow-up Fertilization	acre	18.16	30.00	545
Sub-total				94,650
MILL SITE REVEGETATION				
Scarifying and Recontouring	acre	8.58	1,500.00	12,870
Seeding/Fertilization	acre	8.58	353.90	3,036
Follow-up Fertilization	acre	8.58	30.00	257
Sub-total				16,164
TOTAL				415,884

*Note: Overburden will be applied to 50% of area and no overburden applied to roads

FIGURES



(Reproduced from Equinox Resources
Feasibility Report, April 1990)

EQUINOX RESOURCES (WASH.) INC.

VAN STONE MINE

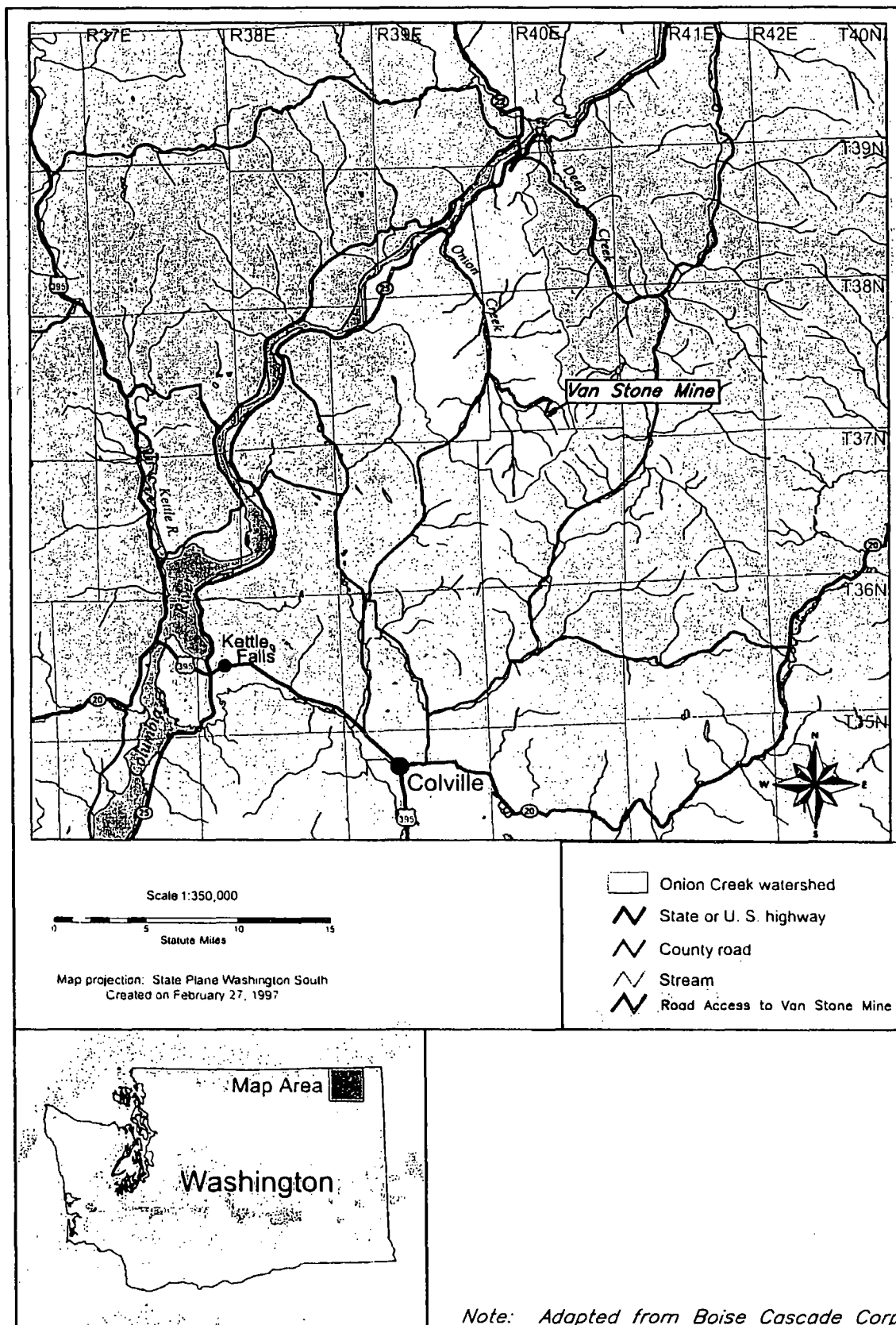
PROPERTY LOCATION MAP

Figure 1

BEACON HILL CONSULTANTS (1988) LTD.

SCALE: AS SHOWN | DATE: MARCH 1995 | FIG. NO.: 1

EQUINOX RESOURCES (WASH.) INC.
VAN STONE MINE
PROJECT ROAD ACCESS



MAY 27, 1999



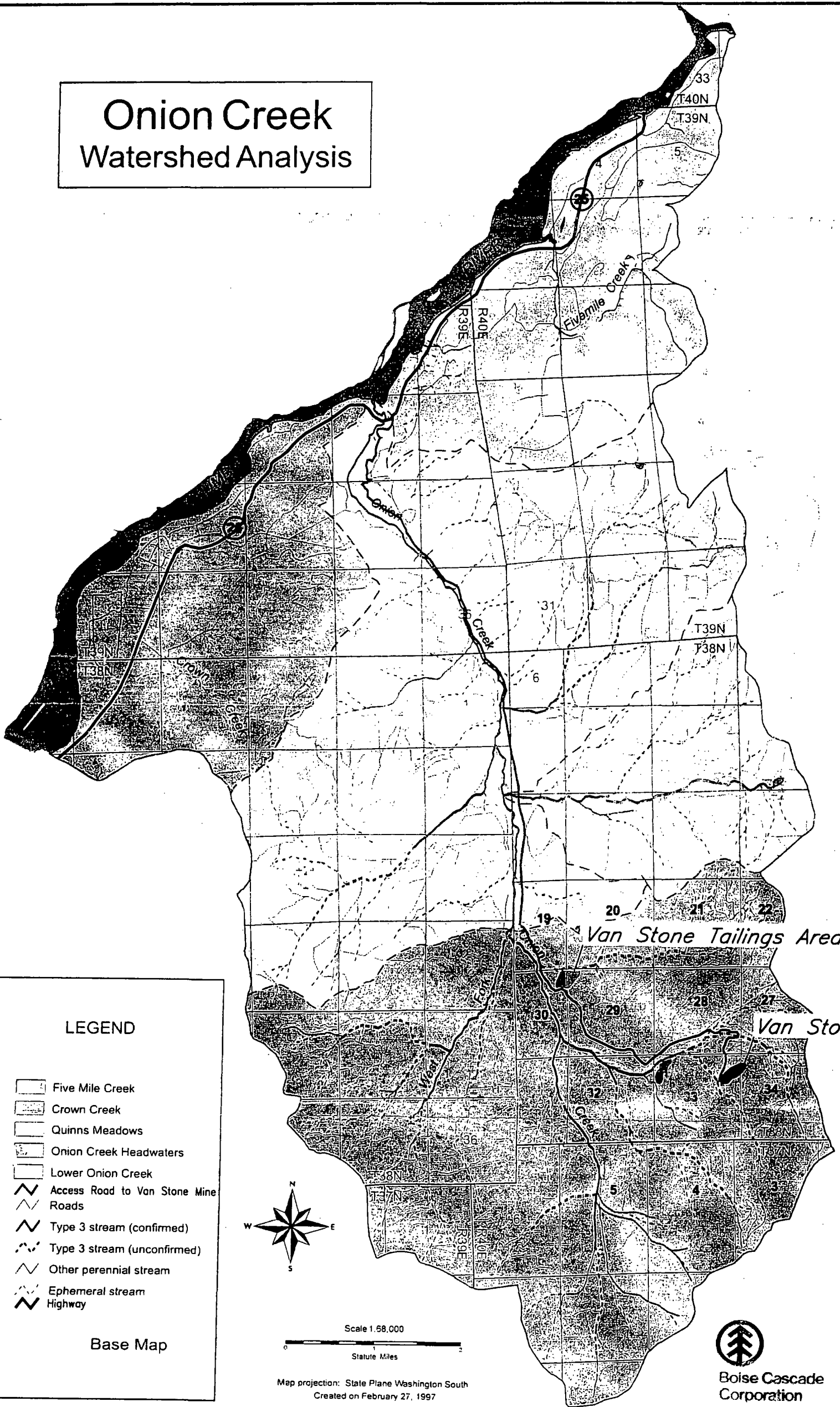
HALLAM KNIGHT PIESOLD LTD.
 ENVIRONMENTAL CONSULTANTS

FIGURE 2



MAY 31, 1999
HALLAM KNIGHT PIESOLD LTD.
ENVIRONMENTAL CONSULTANTS

Onion Creek Watershed Analysis



EQUINOX RESOURCES (WASH.) INC.
VAN STONE MINE
ONION CREEK WATERSHED AND SUBCATCHMENT BOUNDARIES

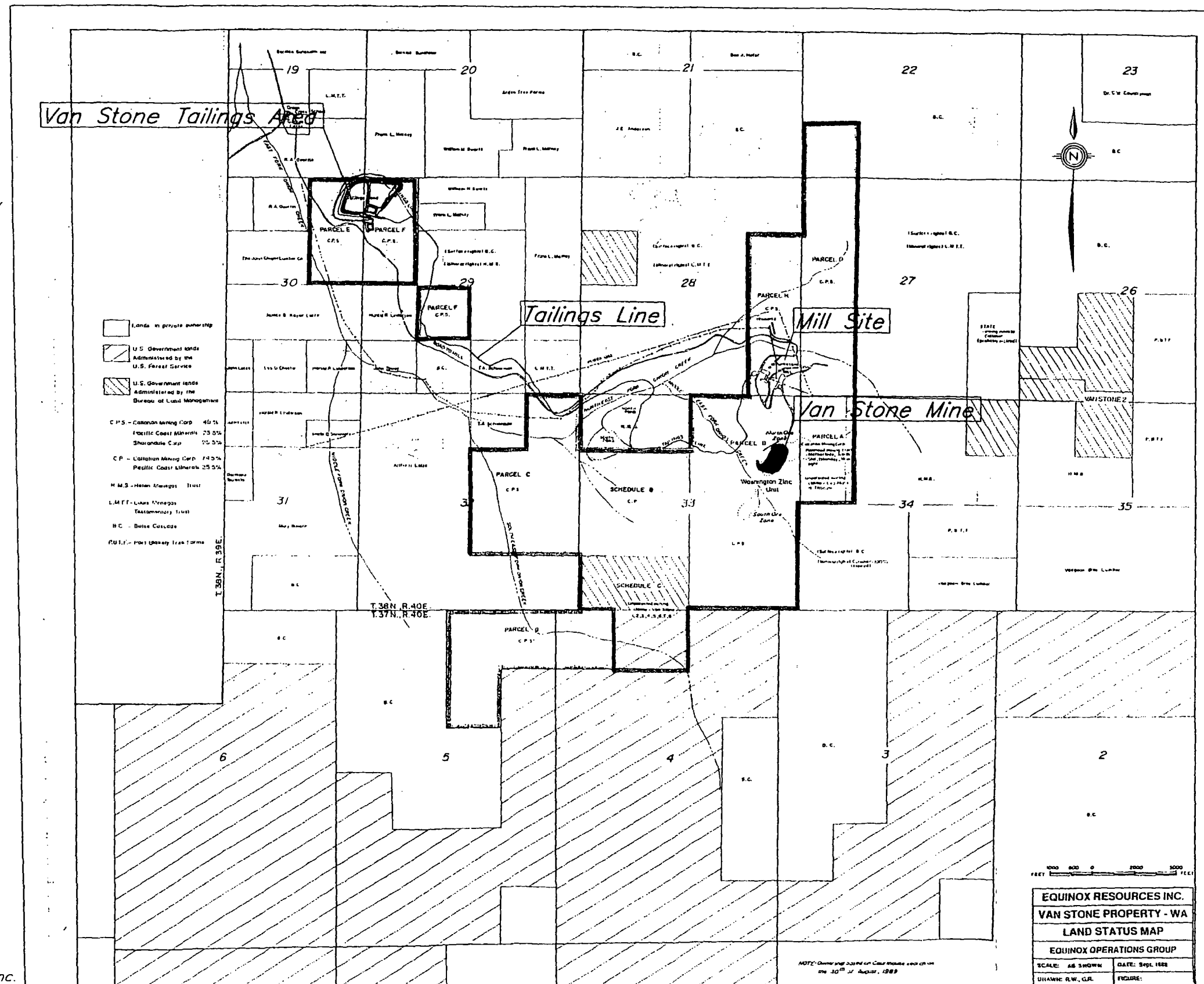


FIGURE 3

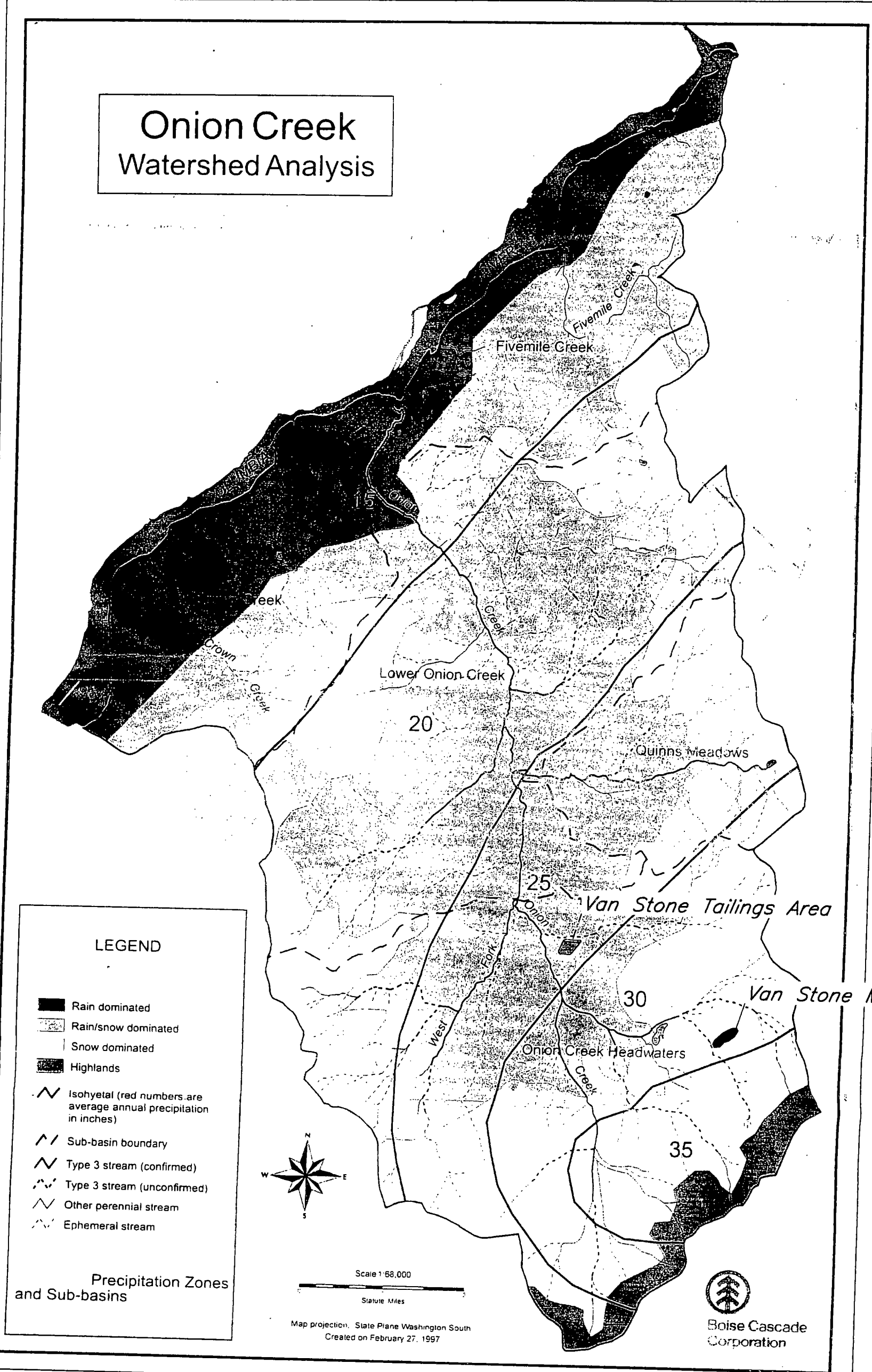
Note: Adapted from Boise Cascade Corp. 1997

EQUINOX RESOURCES (WASH.) INC.
VAN STONE MINE
LAND STATUS MAP

— Current Property Boundary



Note: Adapted from Equinox Resources Inc.



Note: Adapted from Boise Cascade Corp. 1997

EQUINOX RESOURCES (WASH.) INC.
VAN STONE MINE



MAY 27, 1999
HALLAM KNIGHT PIESOLD LTD.
ENVIRONMENTAL CONSULTANTS

Note: Adapted from Boise Cascade Corp. 1997

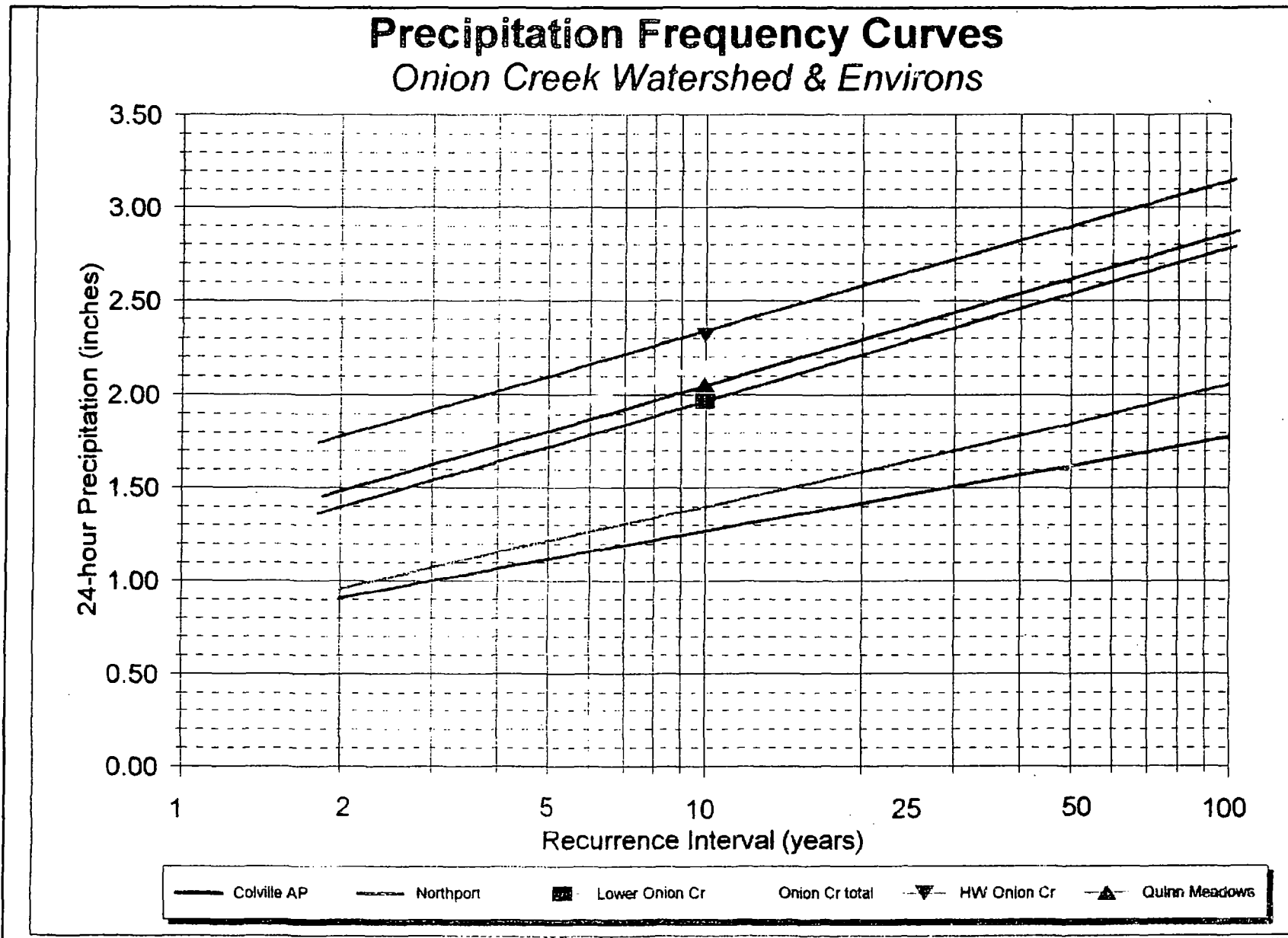


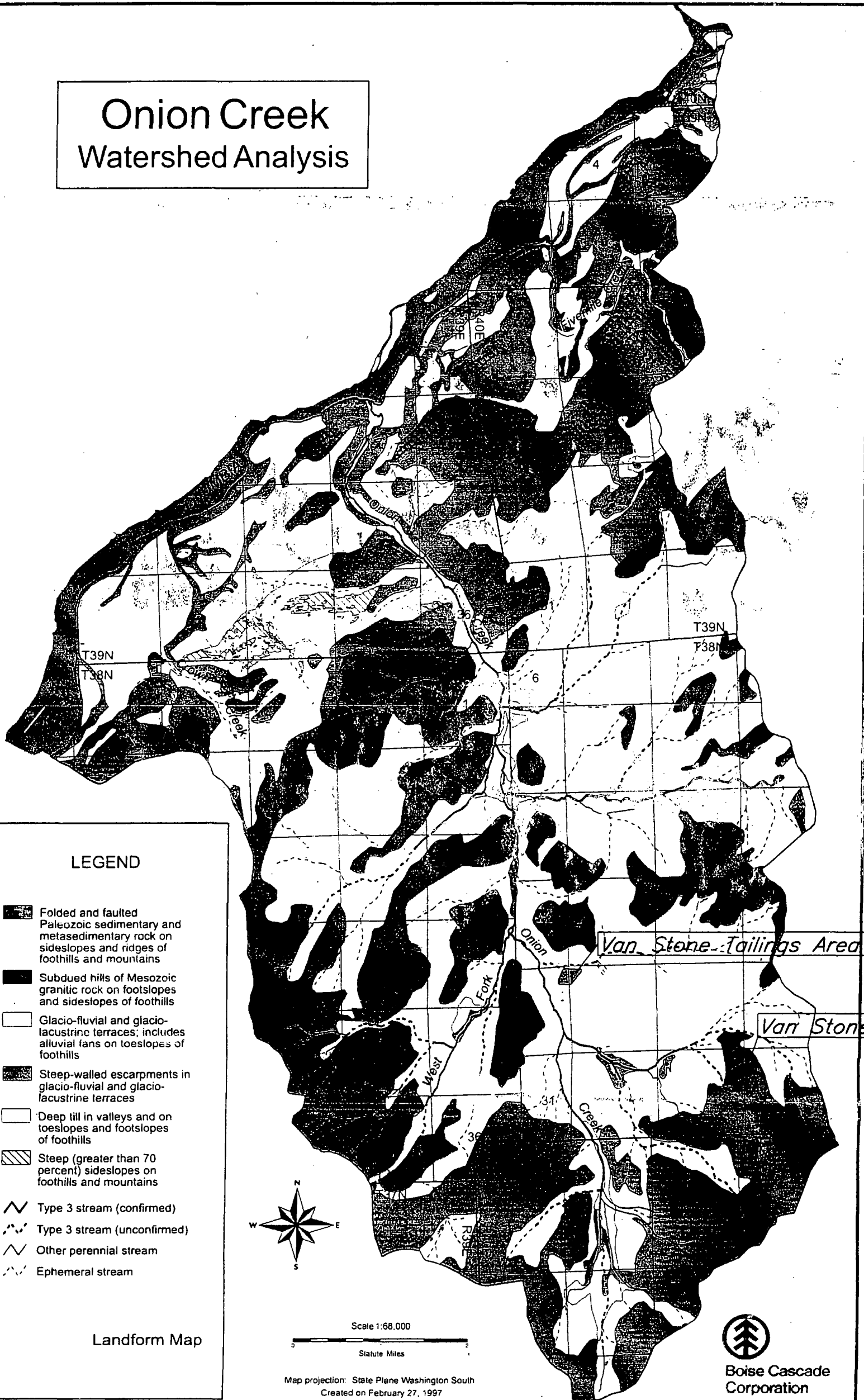
FIGURE 6



HALLAM KNIGHT PIESOLD LTD.
ENVIRONMENTAL CONSULTANTS

MAY 31, 1999

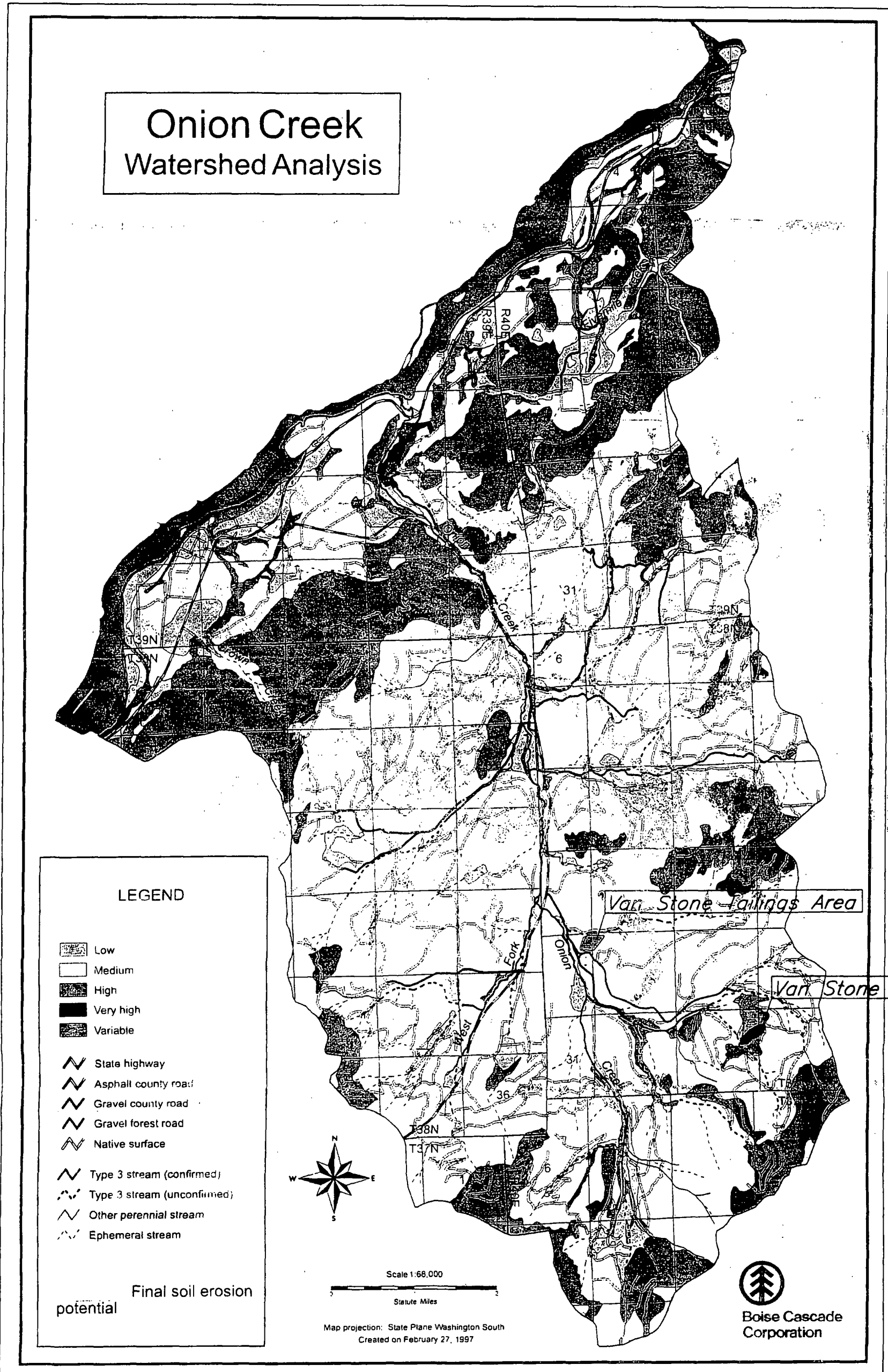
Onion Creek Watershed Analysis



EQUINOX RESOURCES (WASH.) INC.
VAN STONE MINE
LANDFORM MAP

Note: Adapted from Boise Cascade Corp. 1997

FIGURE 7

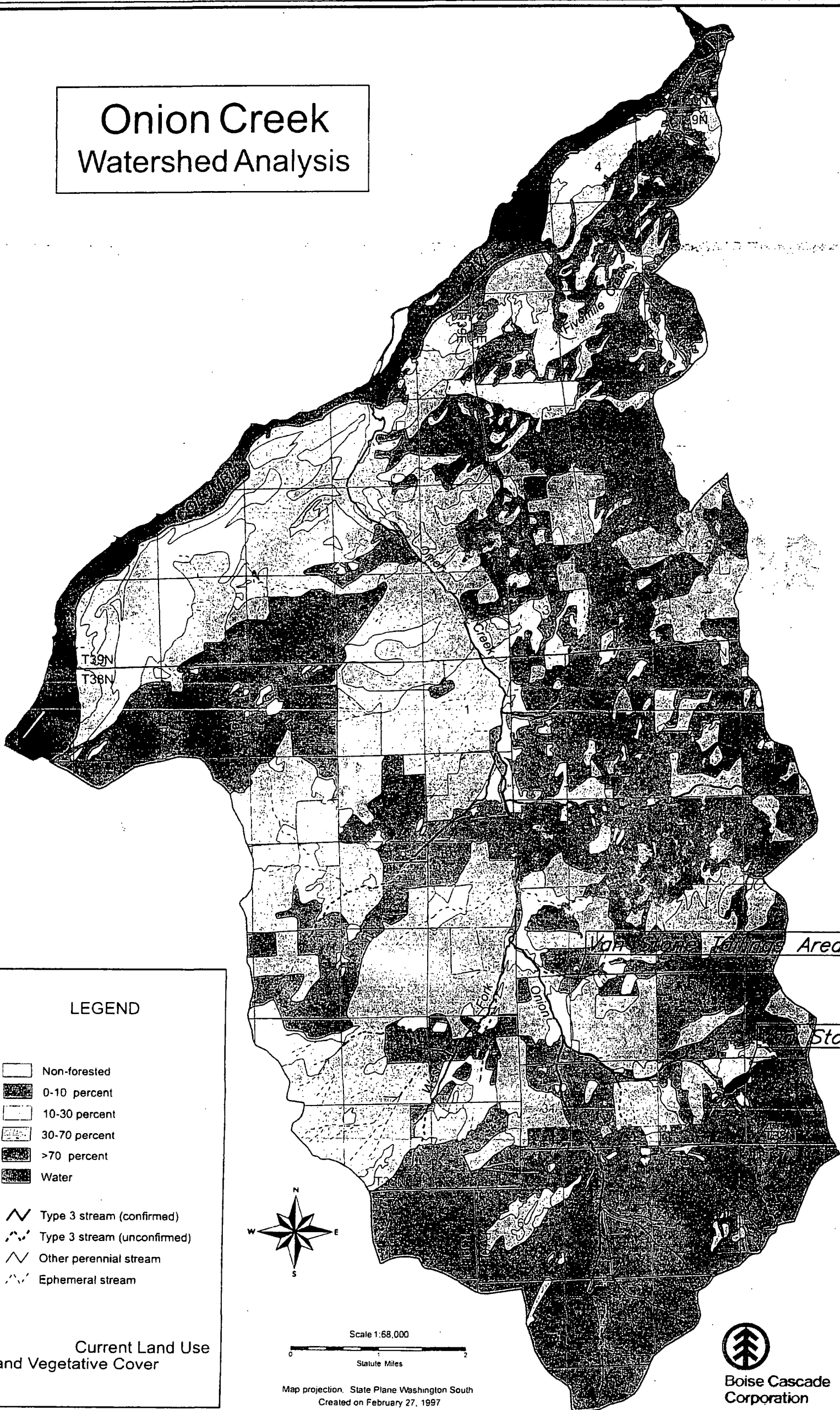


Note: Adapted from Boise Cascade Corp. 1997

FIGURE 8

MAY 31, 1999

Onion Creek Watershed Analysis



EQUINOX RESOURCES (WASH.) INC.
VAN STONE MINE
CURRENT LAND USE AND VEGETATION COVER

Note: Adapted from Boise Cascade Corp. 1997

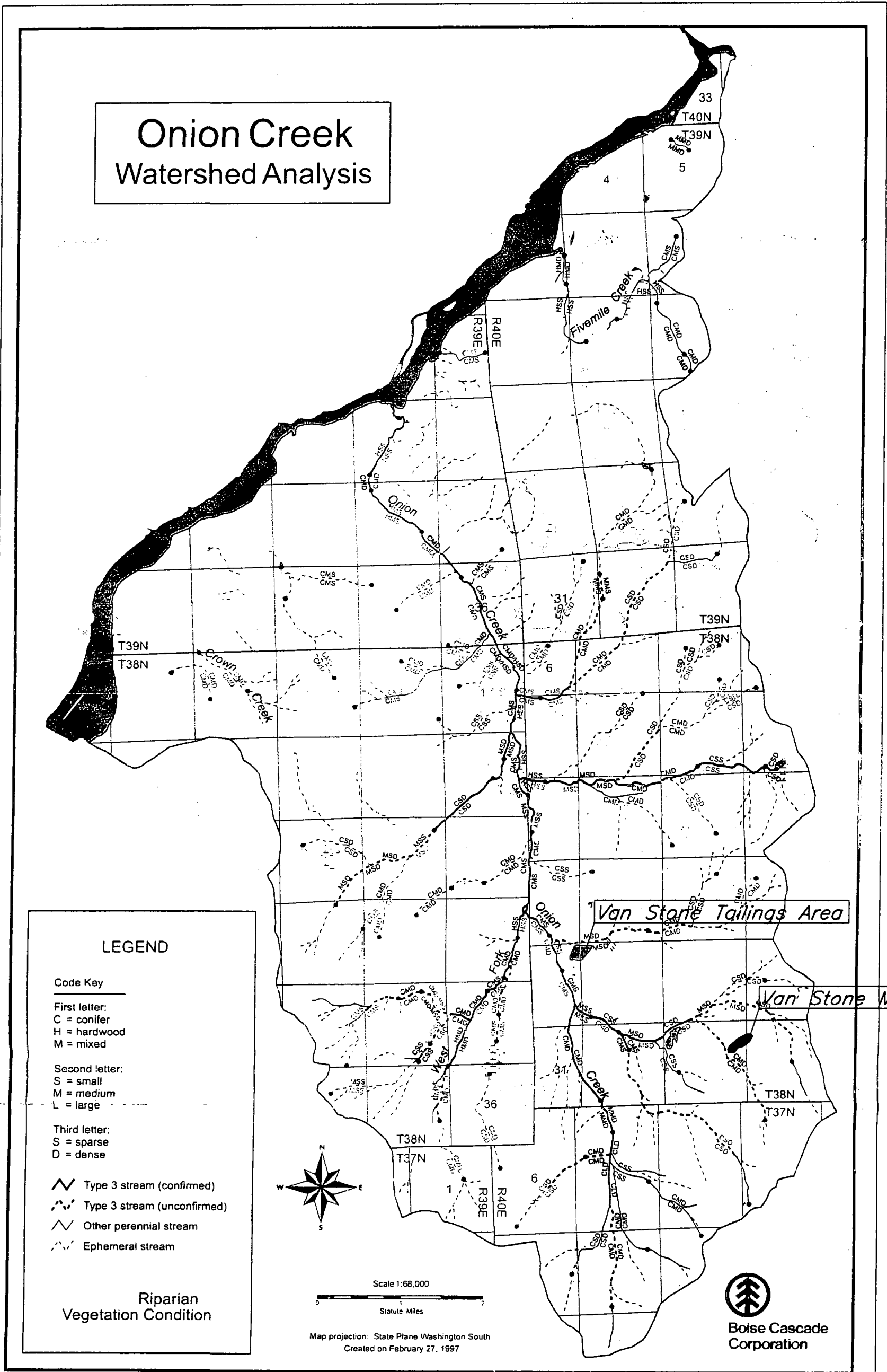
Boise Cascade Corporation

Scale 1:68,000
Statute Miles
Map projection: State Plane Washington South
Created on February 27, 1997

MAY 31, 1999

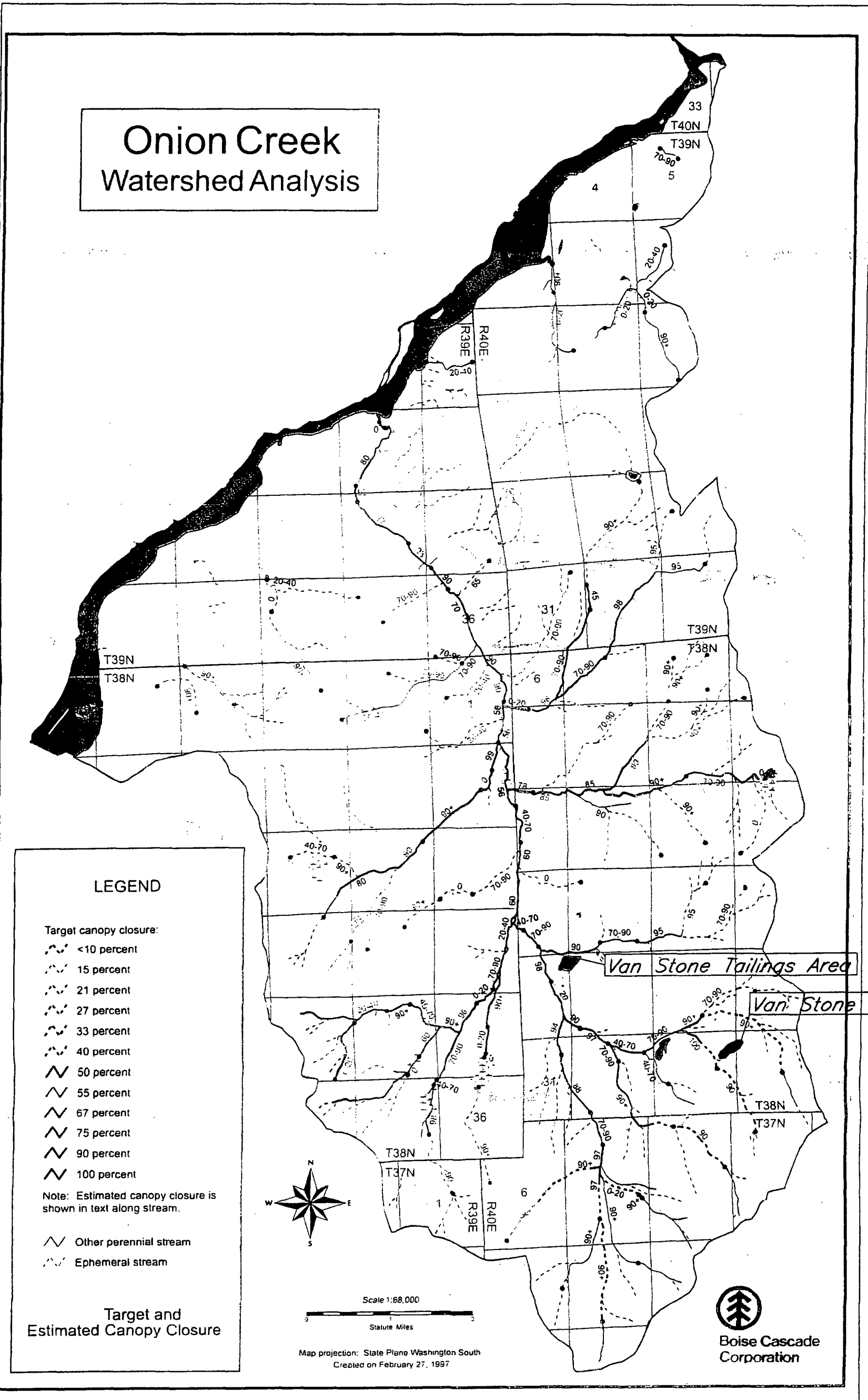
Note: Adapted from Boise Cascade Corp. 1997

FIGURE 10



EQUINOX RESOURCES (WASH.) INC.
VAN STONE MINE
RIPARIAN VEGETATION CONDITION

MAY 31, 1999

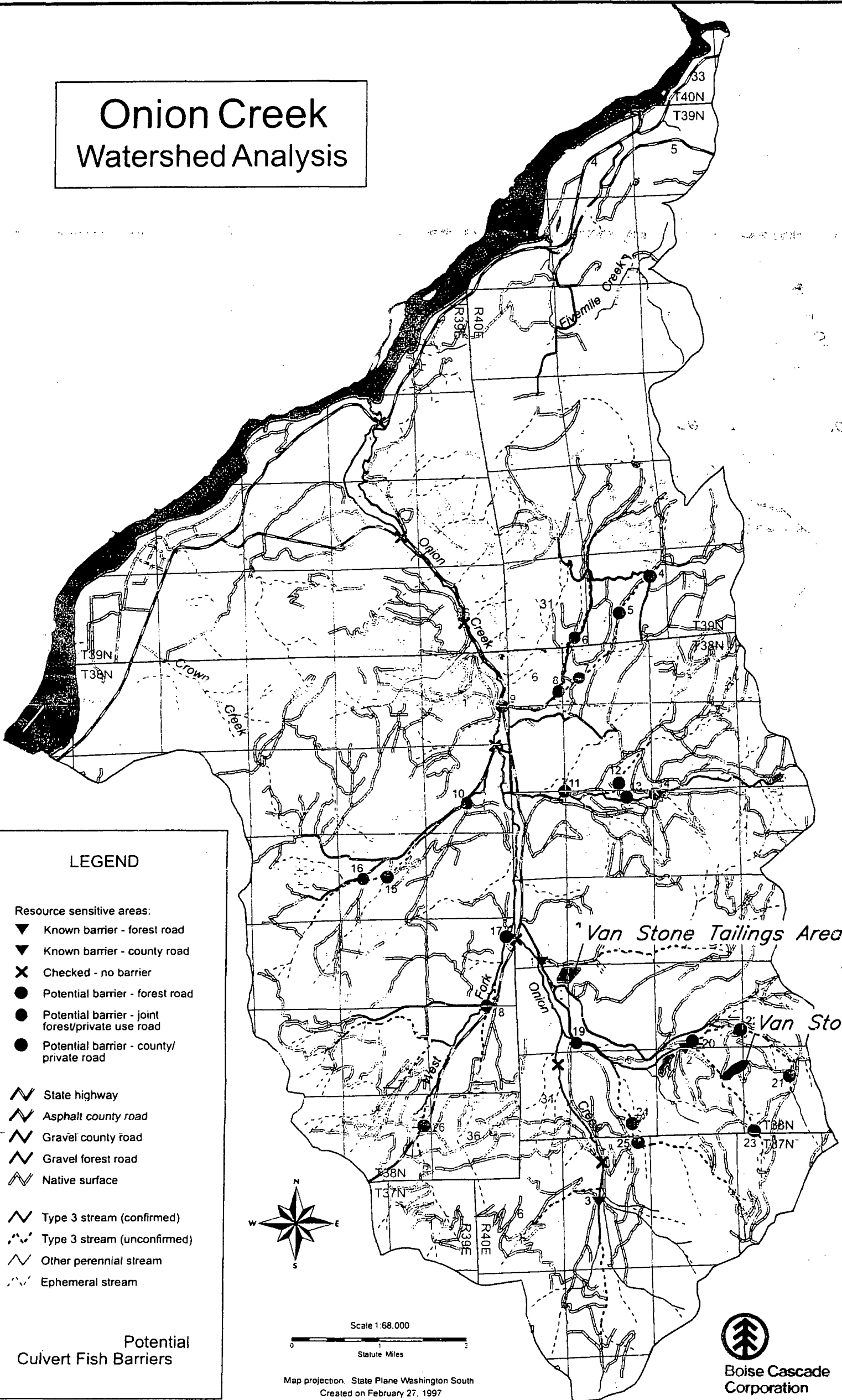


EQUINOX RESOURCES (WASH.) INC.
VAN STONE MINE
TARGET AND ESTIMATED CANOPY CLOSURE

Note: Adopted from Boise Cascade Corp. 1997

MAY 31, 1999

Onion Creek Watershed Analysis



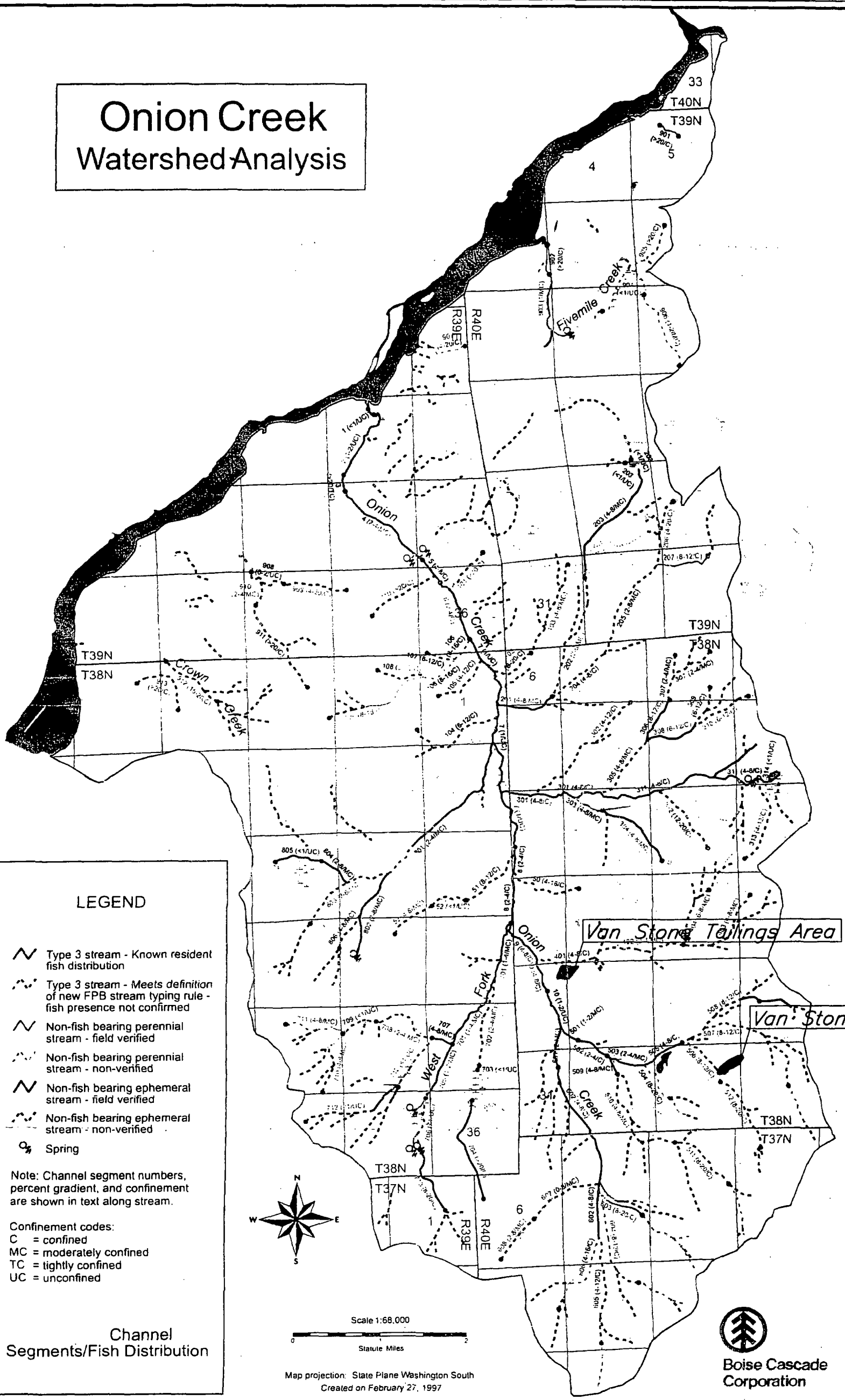
Note: Adapted from Boise Cascade Corp. 1997

FIGURE 12

EQUINOX RESOURCES (WASH.) INC.
VAN STONE MINE
POTENTIAL CULVERT FISH BARRIERS

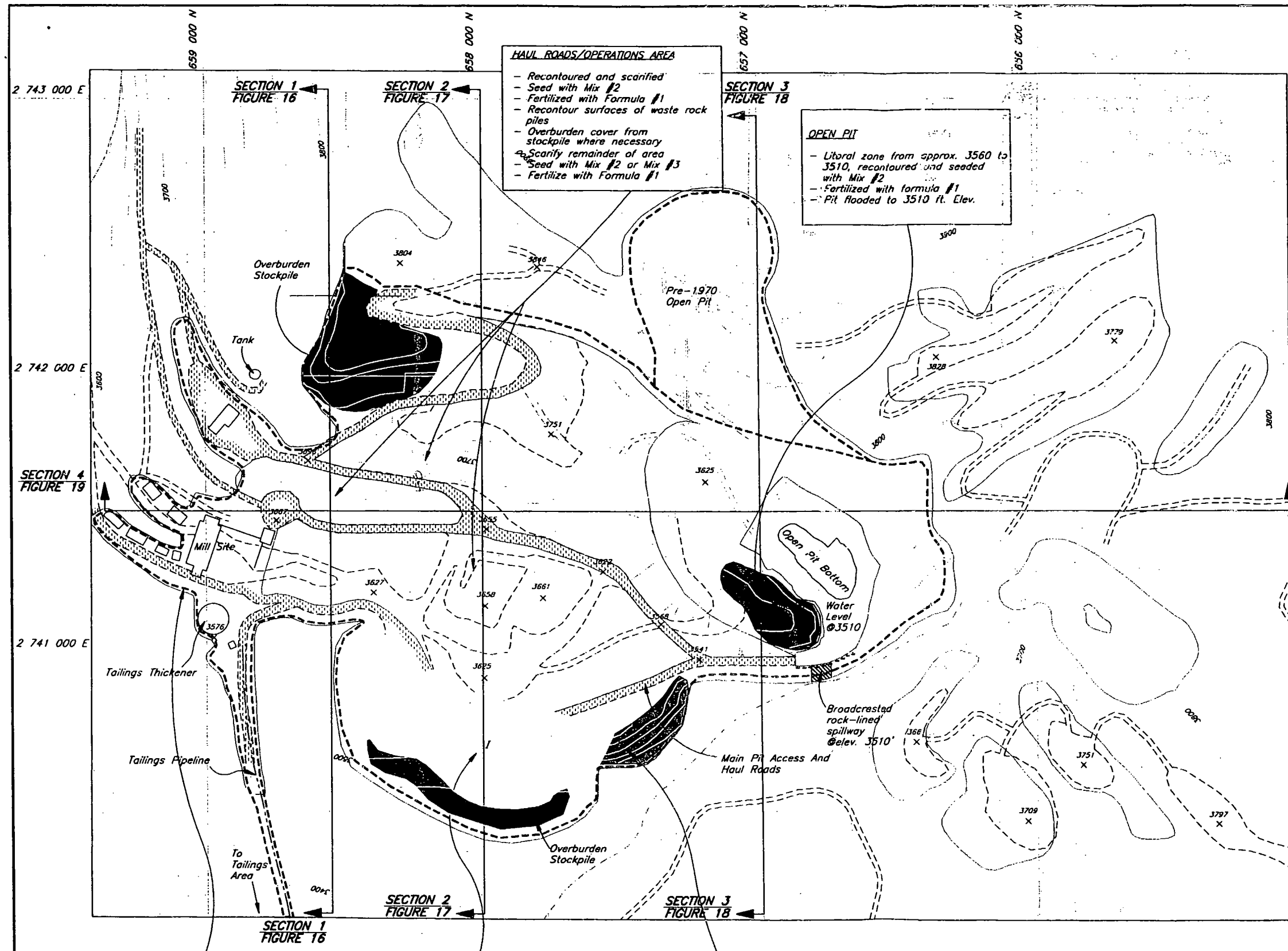
MAY 31, 1999

Onion Creek Watershed Analysis



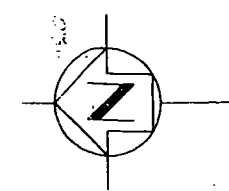
EQUINOX RESOURCES (WASH.) INC.
VAN STONE MINE
CHANNEL SEGMENTS/FISH DISTRIBUTION

Note: Adapted from Boise Cascade Corp. 1997



- HAUL ROADS/OPERATIONS AREA**
- Recontoured and scarified
 - Seed with Mix #2
 - Fertilized with Formula #1
 - Recontour surfaces of waste rock piles
 - Overburden cover from stockpile where necessary
 - Scarify remainder of area
 - Seed with Mix #2 or Mix #3
 - Fertilize with Formula #1

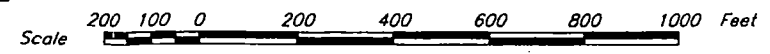
- OPEN PIT**
- Lateral zone from approx. 3560 to 3510, recontoured and seeded with Mix #2
 - Fertilized with formula #1
 - Pit floored to 3510 ft. Elev.



- LEGEND**
- PERMIT BOUNDARY AND BOUNDARY OF POST 1970 DISTURBANCE
 - CONTOUR - INDEX
 - CONTOUR - INTERMEDIATE
 - CONTOUR - DEPRESSION
 - TREELINE
 - ROAD
 - ROADS TO BE RECLAIMED
 - STREAM - PERENNIAL
 - STREAM - INTERMITTENT
 - POND
 - PIPELINE
 - BUILDING

REFERENCE

MAP BY: DEPT OF NATURAL RESOURCES
PHOTOGRAPHY DATE: 7/18/95



NOT FOR CONSTRUCTION

- MILL AND ANCILLARY FACILITIES**
- Equipment removed
 - Hazardous wastes removed
 - Site recontoured and scarified
 - Seeded with Mix #2 and fertilized with Formula #1
 - Planted with seedlings mix deciduous and coniferous

- WASTE ROCK STORAGE AREA-SECTION I**
- Waste rock storage area resloped to 2.5:1 slope
 - Overburden cover from stockpile
 - Seeded with Mix #3
 - Fertilized with Formula #1
 - Possibly, reforested with conifers

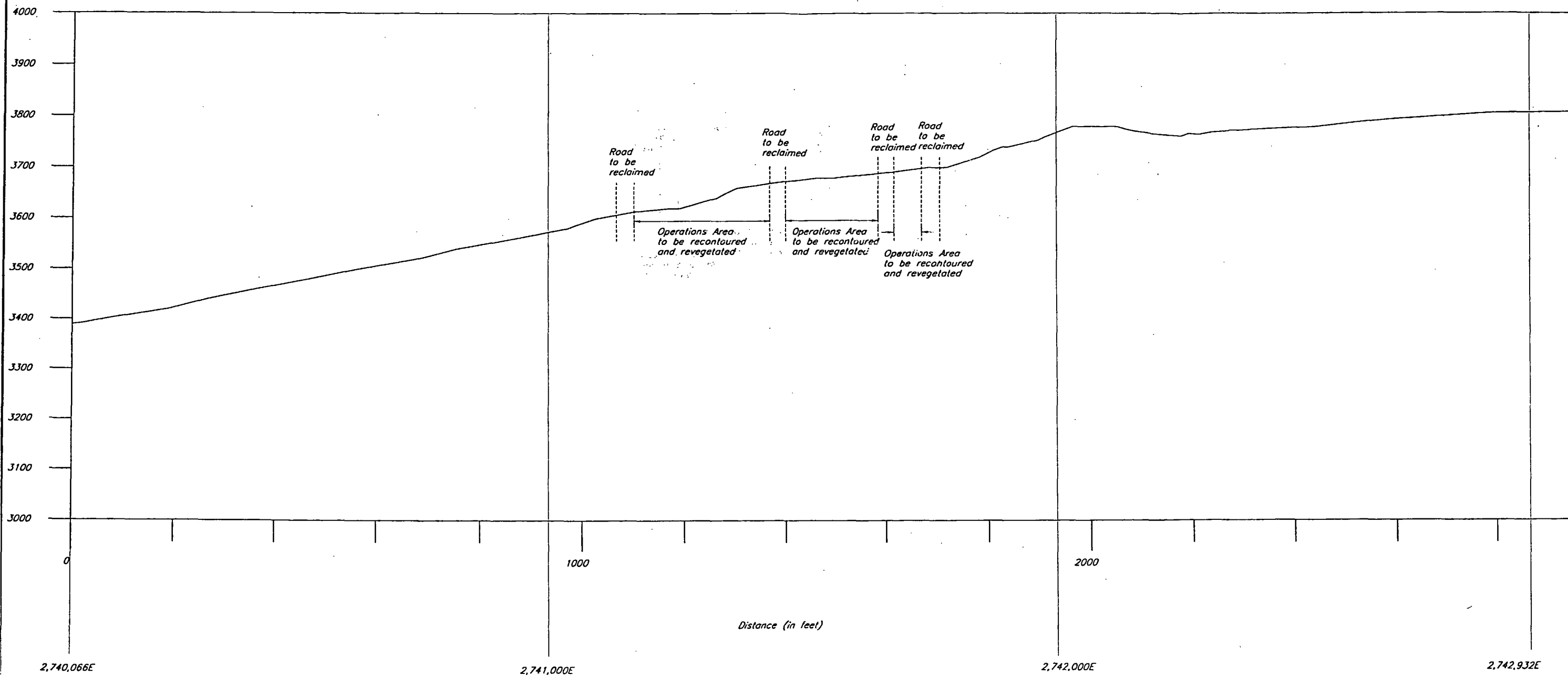
- WASTE ROCK STORAGE AREA-SECTION II**
- Remains in current condition as a talus slope

HALLAM KNIGHT PIESOLD LTD. ENVIRONMENTAL CONSULTANTS-VANCOUVER, B.C.		EQUINOX RESOURCES (WASHINGTON) INC.	
DESIGNED	BH	VAN STONE MINE-OPEN PIT	
DRAWN	AW	CLOSURE OF EXISTING MINE SITE AND RESLOPING OF WASTE ROCK DUMP FIGURE 15	
CHECKED	BH		
APPROVED			
DATE	JUNE 2, 1999	SCALE AS SHOWN	DRG. NO. H3172
		REV.	0

CADD FILE: H3172.DWG (1/18/99) 1:2500 PLOT 1:2500 JUNE 2, 1999

Elevation
(in feet)

SECTION 1
FIGURE 15



Scale 100 50 0 100 200 300 400 500 Feet

NOT FOR CONSTRUCTION

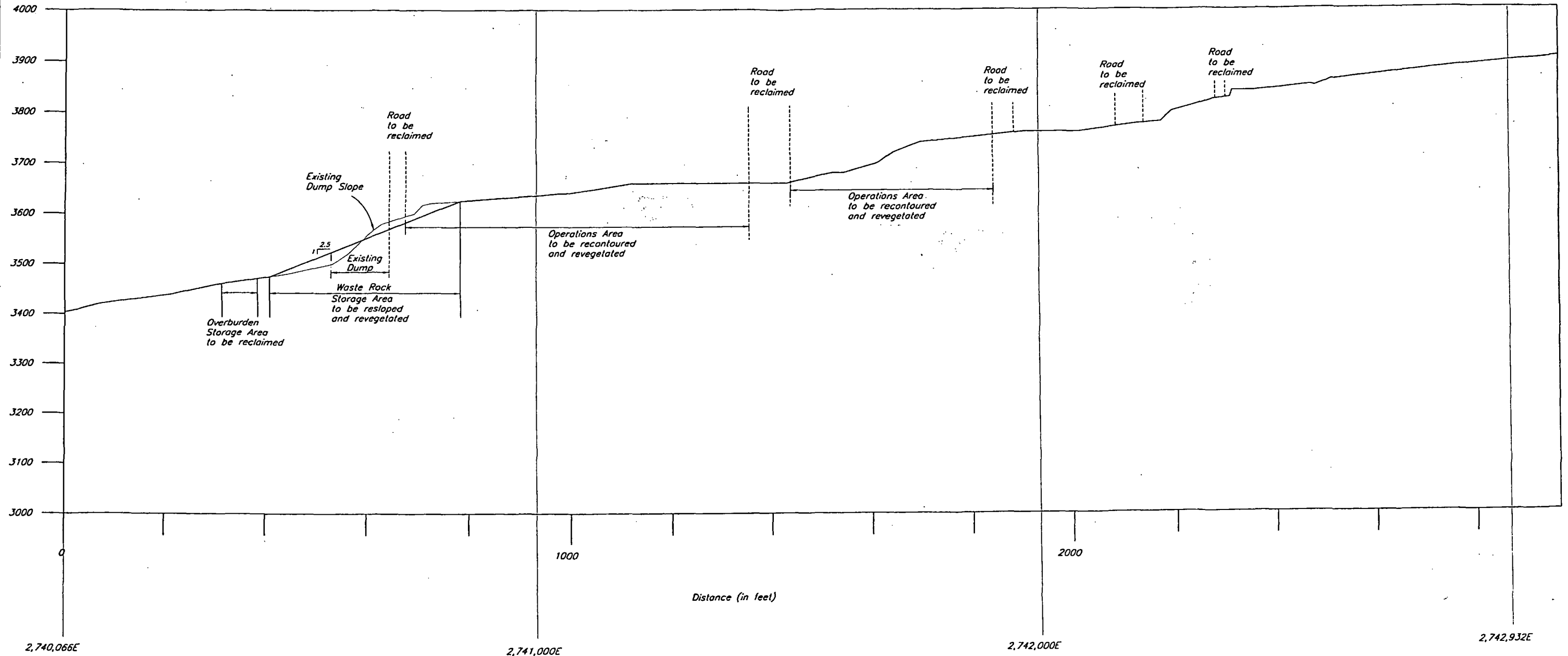
HALLAM KNIGHT PIESOLD LTD. ENVIRONMENTAL CONSULTANTS--VANCOUVER, B.C.				EQUINOX RESOURCES (WASHINGTON) INC.					
				VAN STONE MINE--OPEN PIT					
				CLOSURE OF EXISTING MINE SITE SECTION 1 FIGURE 16					
DATE MAY 21, 1999				SCALE AS SHOWN		DRG. NO. H3172		REV. --	

DRG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED	REV.	DATE	DESCRIPTION	APPROVED
REFERENCE DRAWINGS				REVISIONS		REVISIONS			

DRG. FILE: H3172A0007 1"=100' Plot 1:100 MAY 21, 1999

Elevation
(in feet)

SECTION 2
FIGURE 15



Scale 100 50 0 100 200 300 400 500 Feet

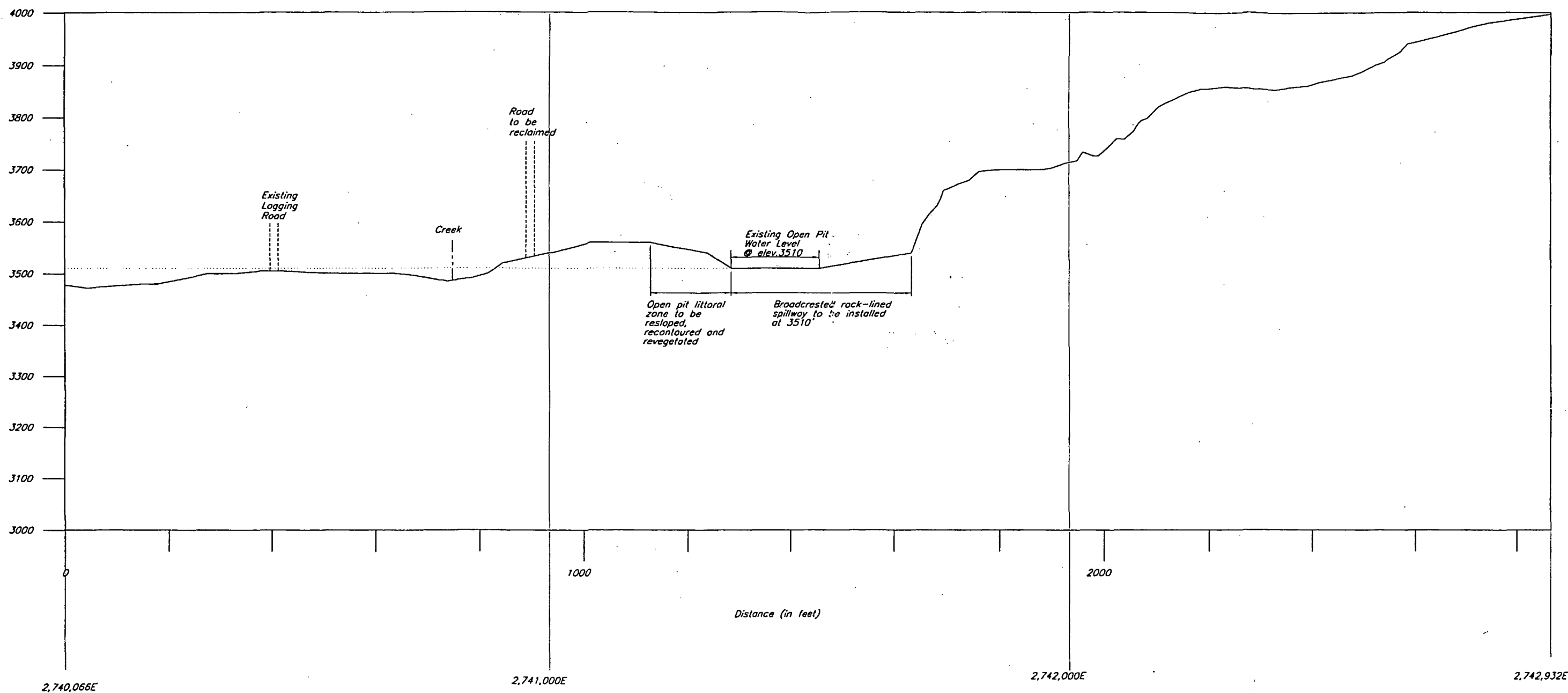
NOT FOR CONSTRUCTION

HALLAM KNIGHT PIESOLD LTD. ENVIRONMENTAL CONSULTANTS-VANCOUVER, B.C.		EQUINOX RESOURCES (WASHINGTON) INC.	
	DESIGNED	BH	VAN STONE MINE-OPEN PIT CLOSURE OF EXISTING MINE SITE SECTION 2 FIGURE 17
	DRAWN	AW	
	CHECKED	BH	
	APPROVED		
DATE MAY 21, 1999		SCALE AS SHOWN	DRG. NO. H3172

DRG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED	REV.	DATE	DESCRIPTION	APPROVED
REFERENCE DRAWINGS				REVISIONS		REVISIONS			

Elevation
(in feet)

SECTION 3
FIGURE 15



Scale 100 50 0 100 200 300 400 500 Feet

NOT FOR CONSTRUCTION

HALLAM KNIGHT PIESOLD LTD.
ENVIRONMENTAL CONSULTANTS-VANCOUVER, B.C.

EQUINOX RESOURCES (WASHINGTON) INC.

VAN STONE MINE-OPEN PIT

CLOSURE OF EXISTING MINE SITE
SECTION 3
FIGURE 18

DATE MAY 21, 1999

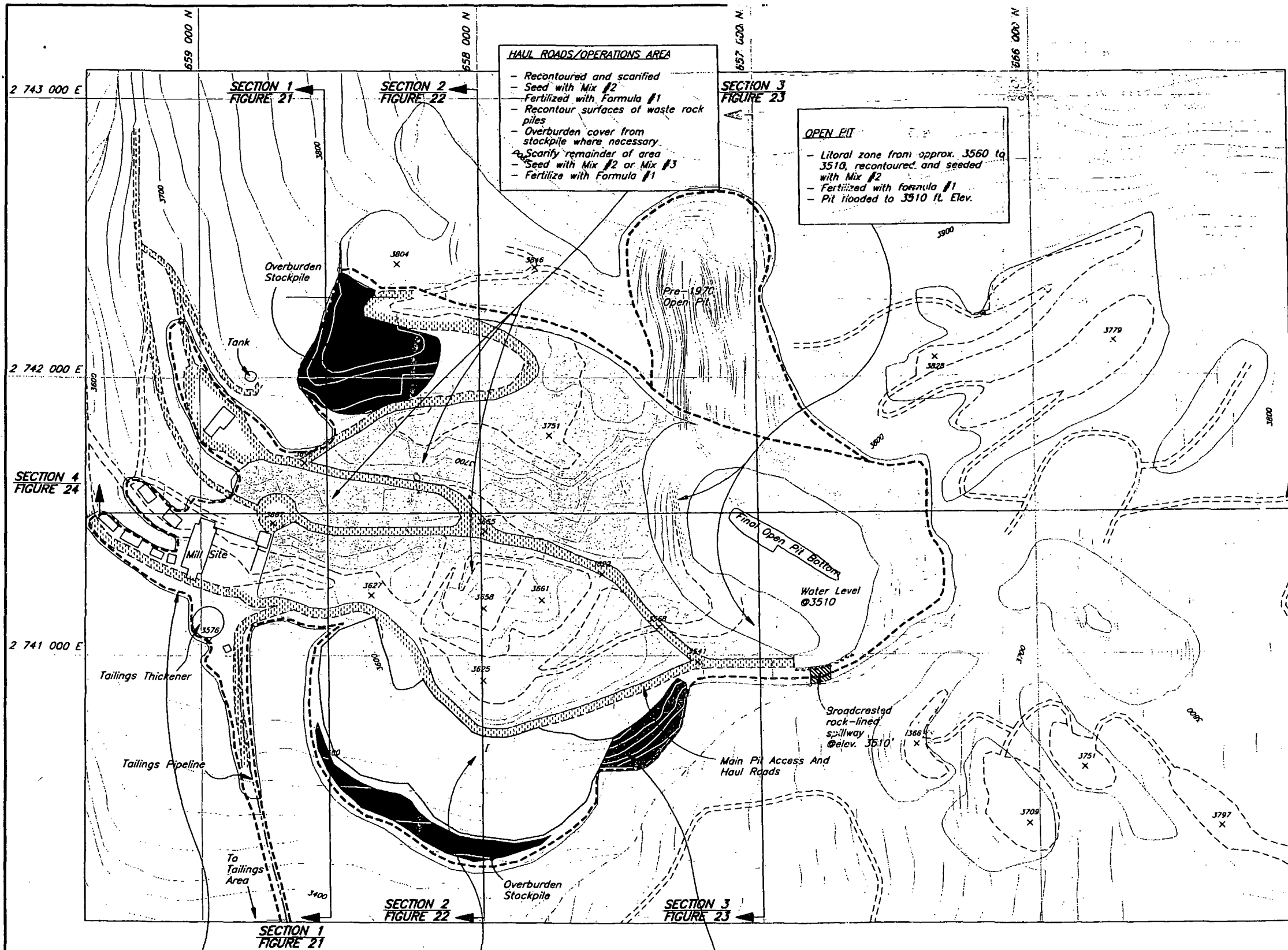
SCALE AS SHOWN

DRG. NO.

H3172

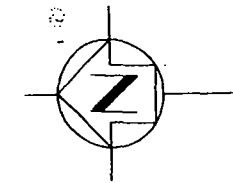
REV. --

DRG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED	REV.	DATE	DESCRIPTION	APPROVED
REFERENCE DRAWINGS				REVISIONS		REVISIONS			



- HAUL ROADS/OPERATIONS AREA**
- Recontoured and scarified
 - Seed with Mix #2
 - Fertilized with Formula #1
 - Recontour surfaces of waste rock piles
 - Overburden cover from stockpile where necessary
 - Scarify remainder of area
 - Seed with Mix #2 or Mix #3
 - Fertilize with Formula #1

- OPEN PIT**
- Littoral zone from approx. 3560 to 3510, recontoured and seeded with Mix #2
 - Fertilized with formula #1
 - Pit flooded to 3510 ft. Elev.



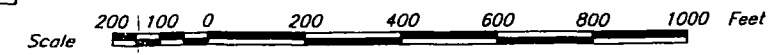
**SECTION 4
FIGURE 24**

LEGEND

- PERMIT BOUNDARY AND BOUNDARY OF POST 1970 DISTURBANCE
- CONTOUR - INDEX
- CONTOUR - INTERMEDIATE
- CONTOUR - DEPRESSION
- TREELINE
- ROAD
- ROADS TO BE RECLAIMED
- STREAM - PERENNIAL
- STREAM - INTERMITTENT
- POND
- PIPELINE
- BUILDING

REFERENCE

MAP BY: DEPT OF NATURAL RESOURCES
PHOTOGRAPHY DATE: 7/18/95



NOT FOR CONSTRUCTION

- MILL AND ANCILLARY FACILITIES**
- Equipment removed
 - Hazardous wastes removed
 - Site recontoured and scarified
 - Seeded with Mix #2 and fertilized with Formula #1
 - Planted with seedlings mix deciduous and coniferous

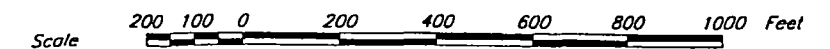
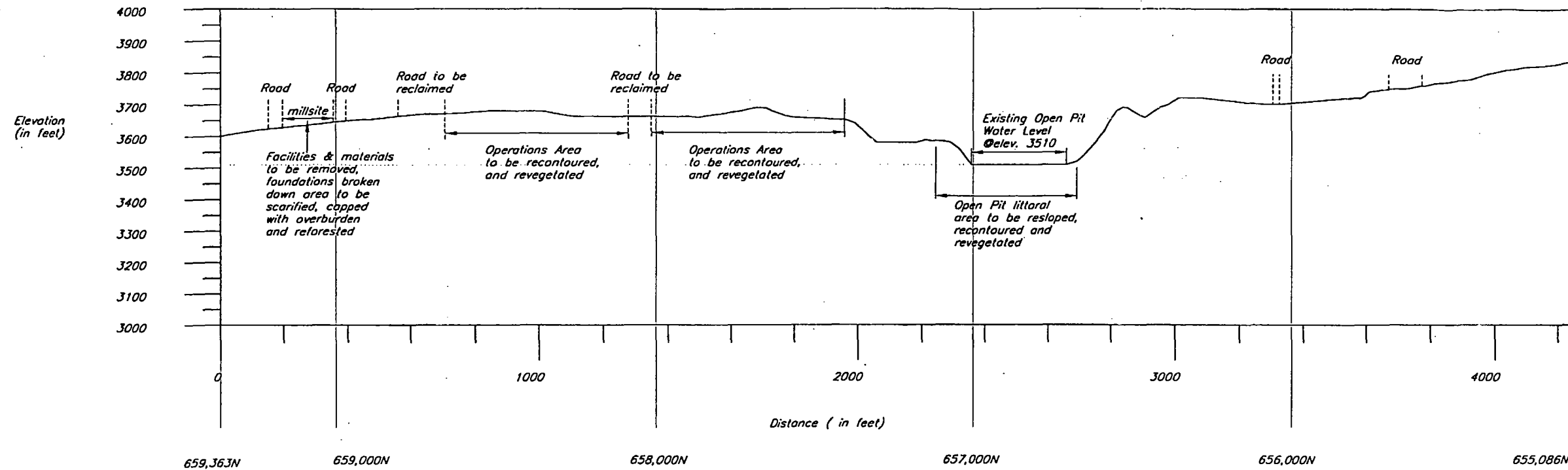
- WASTE ROCK STORAGE AREA-SECTION I**
- Waste rock storage area contoured at 2.5:1 slope
 - Overburden cover from stockpile
 - Seeded with Mix #3
 - Fertilized with Formula #1
 - Possibly reforested with conifers

- WASTE ROCK STORAGE AREA-SECTION II**
- Remains in current condition as a talus slope

HALLAM KNIGHT PIESOLD LTD. ENVIRONMENTAL CONSULTANTS-VANCOUVER, B.C.		EQUINOX RESOURCES (WASHINGTON) INC.	
		VAN STONE MINE-OPEN PIT	
		CLOSURE OF RE-OPENED OPERATIONS FIGURE 20	
DESIGNED	BH		
DRAWN	AW		
CHECKED	BH		
APPROVED			
DATE	JUNE 2, 1999	SCALE AS SHOWN	DRG. NO. H3172
		REV.	0

S:\00 FILES\3172\016\01602001 4 1"=200' Plot 1-200 JUNE 2, 1999

SECTION 4
FIGURE 15



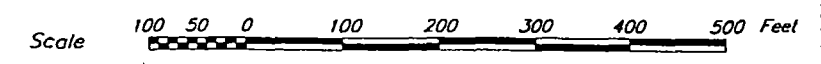
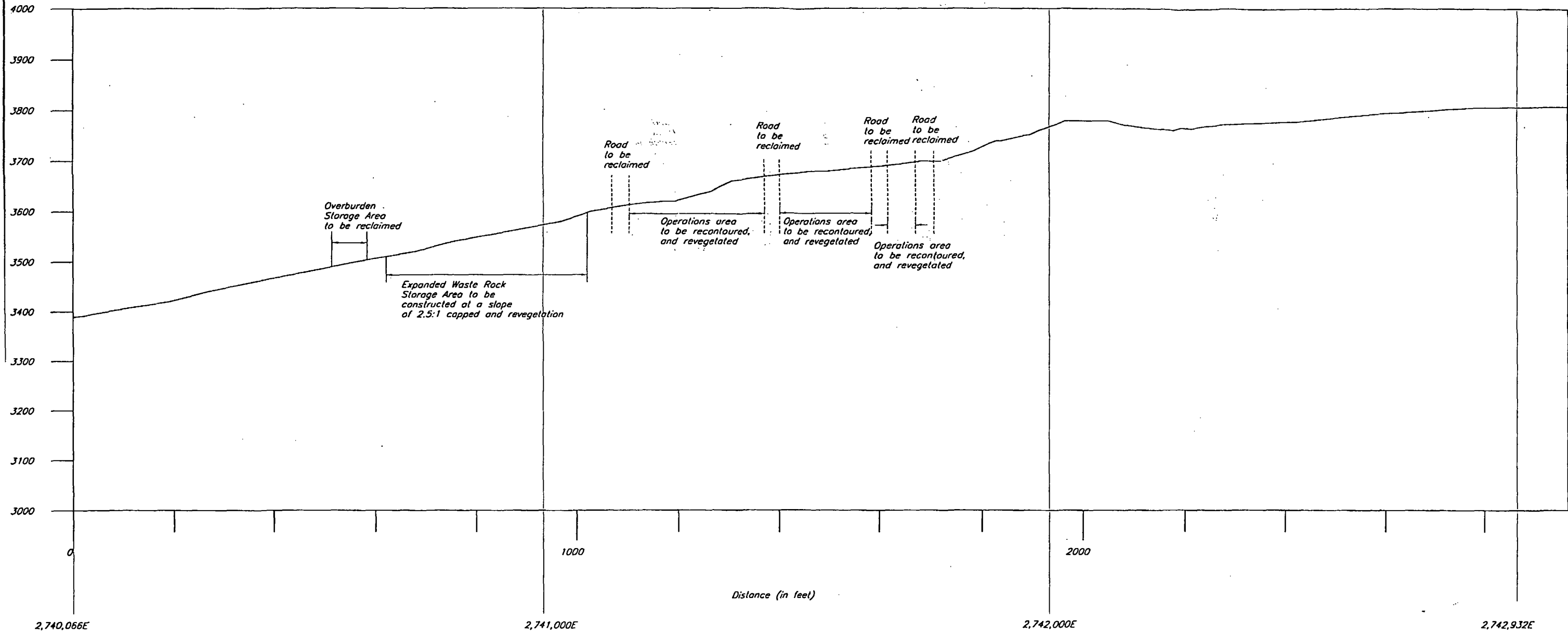
NOT FOR CONSTRUCTION

HALLAM KNIGHT PIESOLD LTD. ENVIRONMENTAL CONSULTANTS-VANCOUVER, B.C.		EQUINOX RESOURCES (WASHINGTON) INC.		
	DESIGNED BH	VAN STONE MINE-OPEN PIT		
	DRAWN AW	CLOSURE OF EXISTING MINE SITE SECTION 4 FIGURE 19		
	CHECKED BH			
	APPROVED			
DATE	JUNE 4, 1999	SCALE AS SHOWN	DRG. NO. H3172	REV. —

DRG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED	REV.	DATE	DESCRIPTION	APPROVED
REFERENCE DRAWINGS				REVISIONS		REVISIONS			

Elevation
(in feet)

SECTION 1
FIGURE 20



NOT FOR CONSTRUCTION

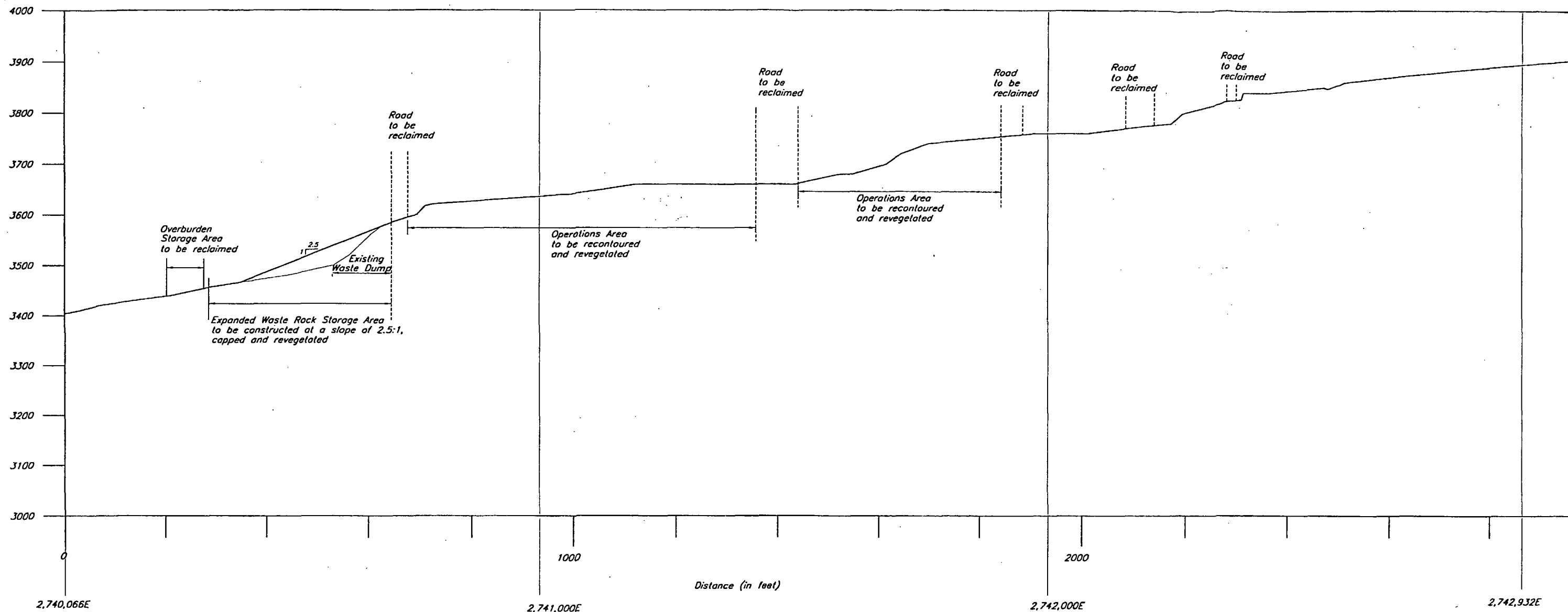
HALLAM KNIGHT PIESOLD LTD. ENVIRONMENTAL CONSULTANTS-VANCOUVER, B.C.		EQUINOX RESOURCES (WASHINGTON) INC.	
DESIGNED	BH	VAN STONE MINE-OPEN PIT	
DRAWN	AW	CLOSURE OF RE-OPENED OPERATIONS	
CHECKED	BH	SECTION 1	
APPROVED		FIGURE 21	
DATE MAY 21, 1999		SCALE AS SHOWN	DRG. NO. H3172

DRG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED	REV.	DATE	DESCRIPTION	APPROVED
	REFERENCE DRAWINGS			REVISIONS				REVISIONS	

DRG. FILE: H3172.DWG 1"=100' MAY 21, 1999

Elevation
(in feet)

SECTION 2
FIGURE 20



Scale 100 50 0 100 200 300 400 500 Feet

NOT FOR CONSTRUCTION

HALLAM KNIGHT PIESOLD LTD.
ENVIRONMENTAL CONSULTANTS-VANCOUVER, B.C.

EQUINOX RESOURCES (WASHINGTON) INC.

VAN STONE MINE-OPEN PIT

CLOSURE OF RE-OPENED OPERATIONS
SECTION 2
FIGURE 22

DATE MAY 21, 1999

SCALE AS SHOWN

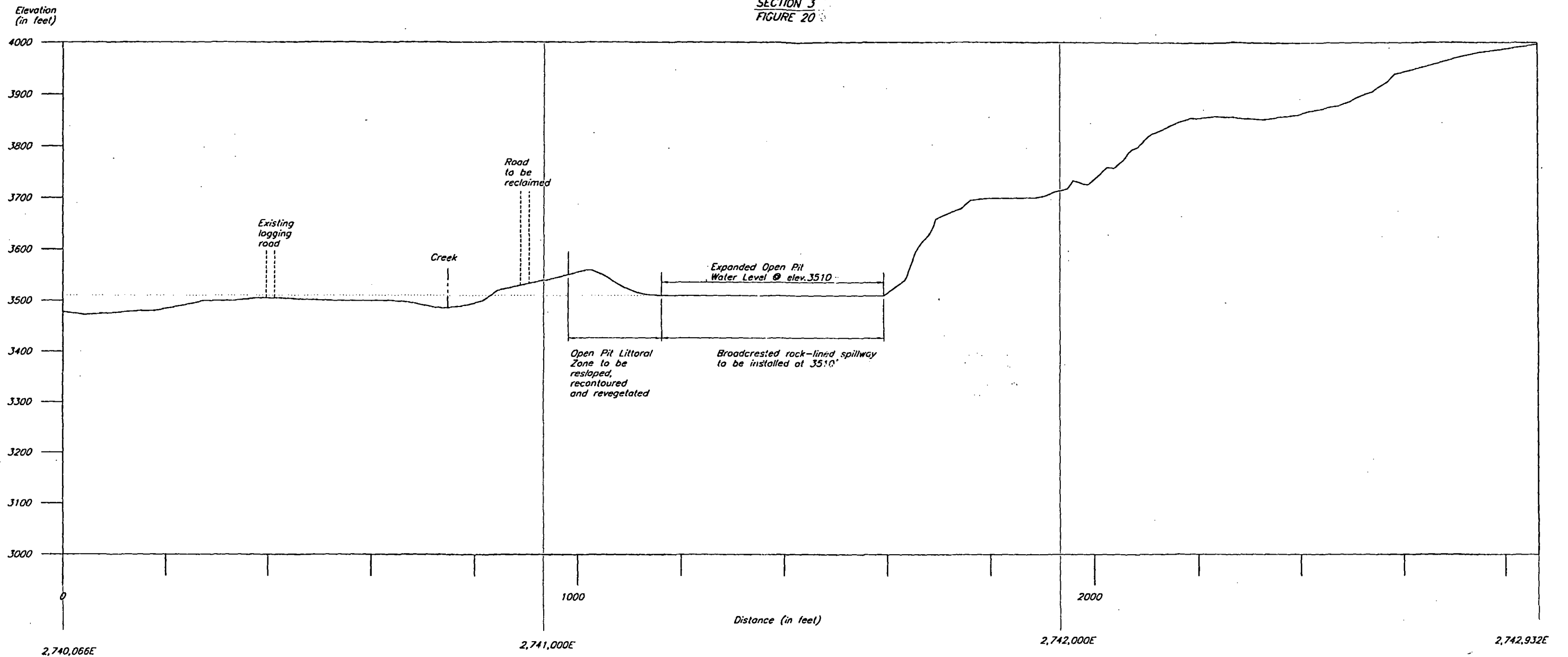
DRG. NO.

H3172

REV. -

DRG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED	REV.	DATE	DESCRIPTION	APPROVED
REFERENCE DRAWINGS			REVISIONS			REVISIONS			

SECTION 3
FIGURE 20



Scale 100 50 0 100 200 300 400 500 Feet

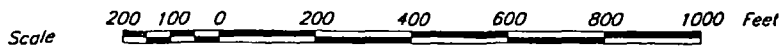
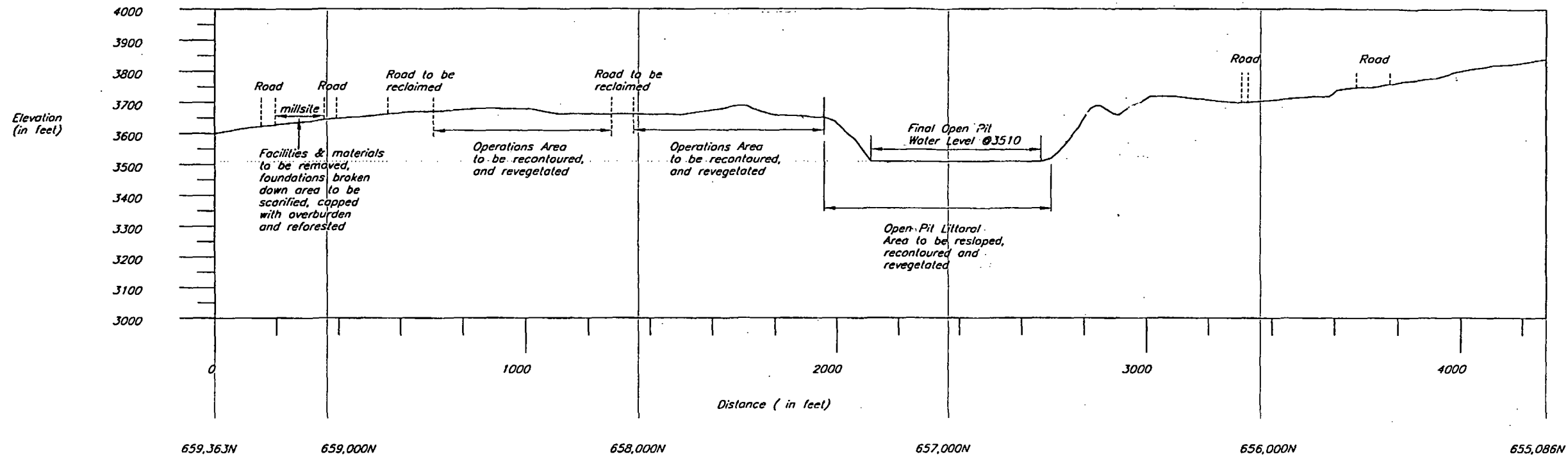
NOT FOR CONSTRUCTION

HALLAM KNIGHT PIESOLD LTD. ENVIRONMENTAL CONSULTANTS-VANCOUVER, B.C.				EQUINOX RESOURCES (WASHINGTON) INC.							
				VAN STONE MINE-OPEN PIT							
				CLOSURE OF RE-OPENED OPERATIONS SECTION 3 FIGURE 23							
DESIGNED		BH									
DRAWN		AW									
CHECKED		BH									
APPROVED											
DATE		MAY 21, 1999		SCALE AS SHOWN		DRG. NO.		H3172		REV. —	

DRG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED	REV.	DATE	DESCRIPTION	APPROVED
REFERENCE DRAWINGS				REVISIONS				REVISIONS	

Dwg File: H3172\013\013 1"=100' Plot 1:100 May 21, 1999

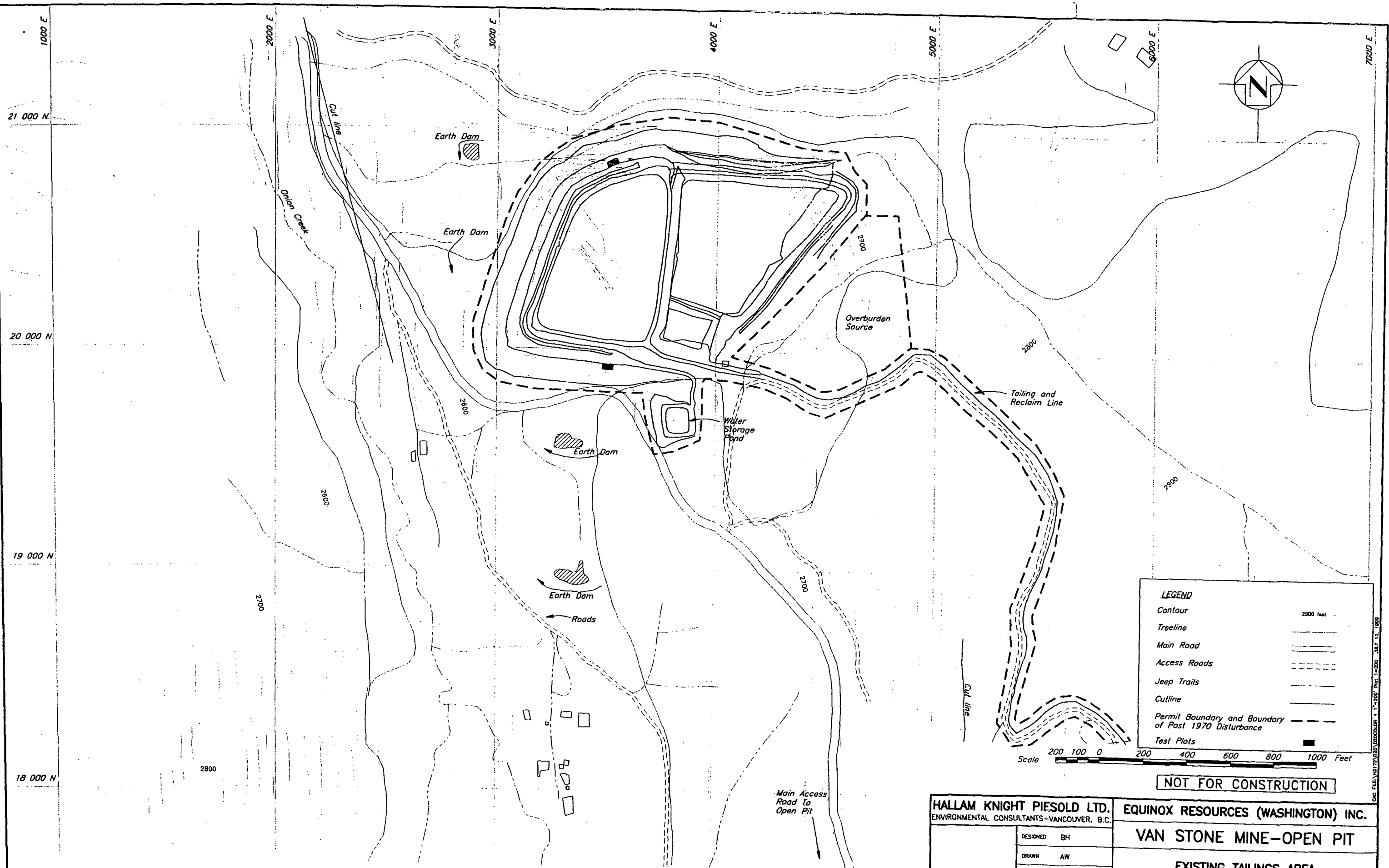
SECTION 4
FIGURE 20



NOT FOR CONSTRUCTION

HALLAM KNIGHT PIESOLD LTD. ENVIRONMENTAL CONSULTANTS-VANCOUVER, B.C.		EQUINOX RESOURCES (WASHINGTON) INC.		
	DESIGNED BH	VAN STONE MINE-OPEN PIT		
	DRAWN AW	CLOSURE OF RE-OPENED OPERATIONS SECTION 4 FIGURE 24		
	CHECKED BH			
	APPROVED			
DATE	JUNE 4, 1999	SCALE AS SHOWN	DRG. NO. H3172	REV. -

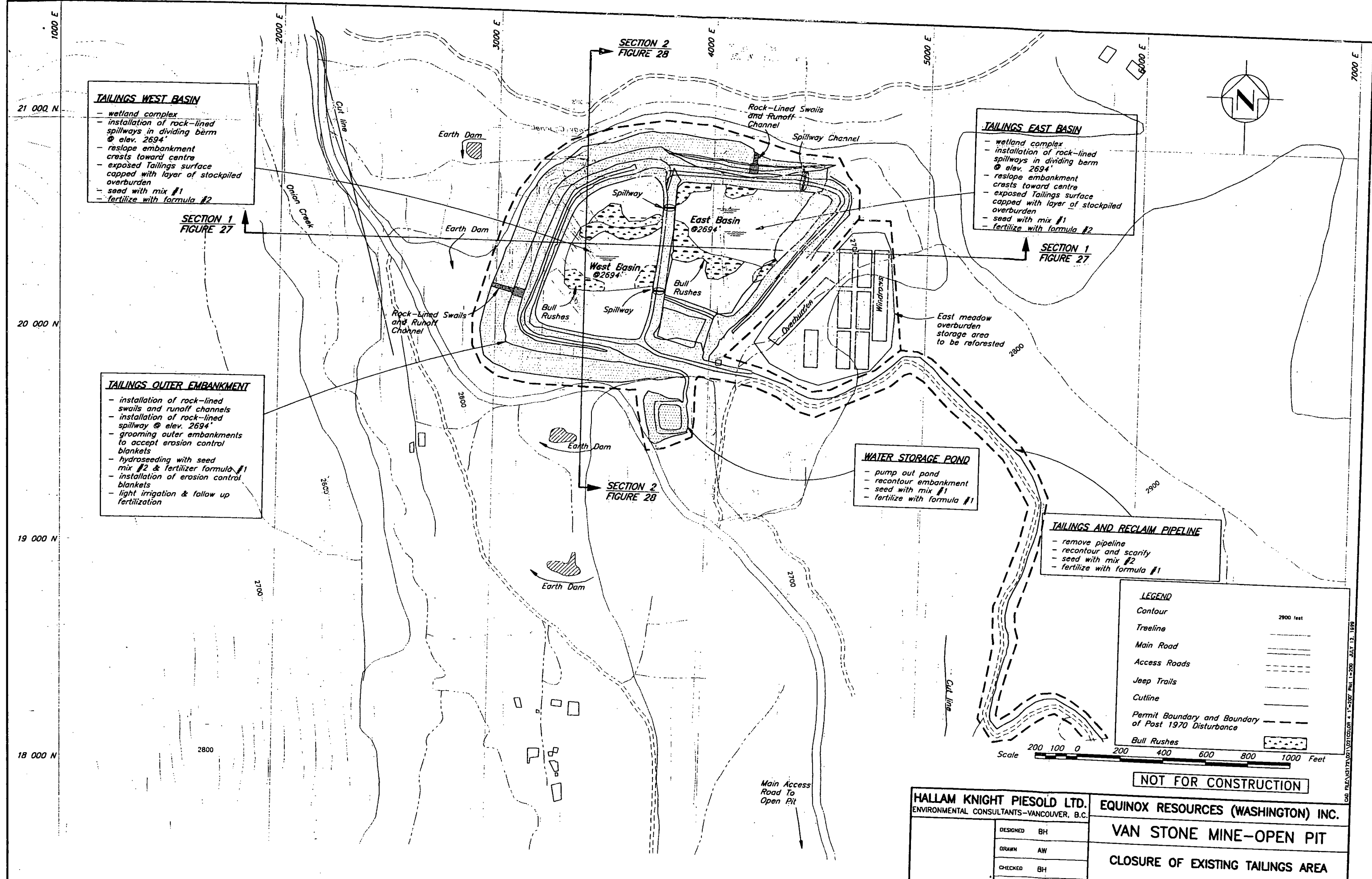
DRG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED	REV.	DATE	DESCRIPTION	APPROVED
REFERENCE DRAWINGS				REVISIONS		REVISIONS			



NOT FOR CONSTRUCTION

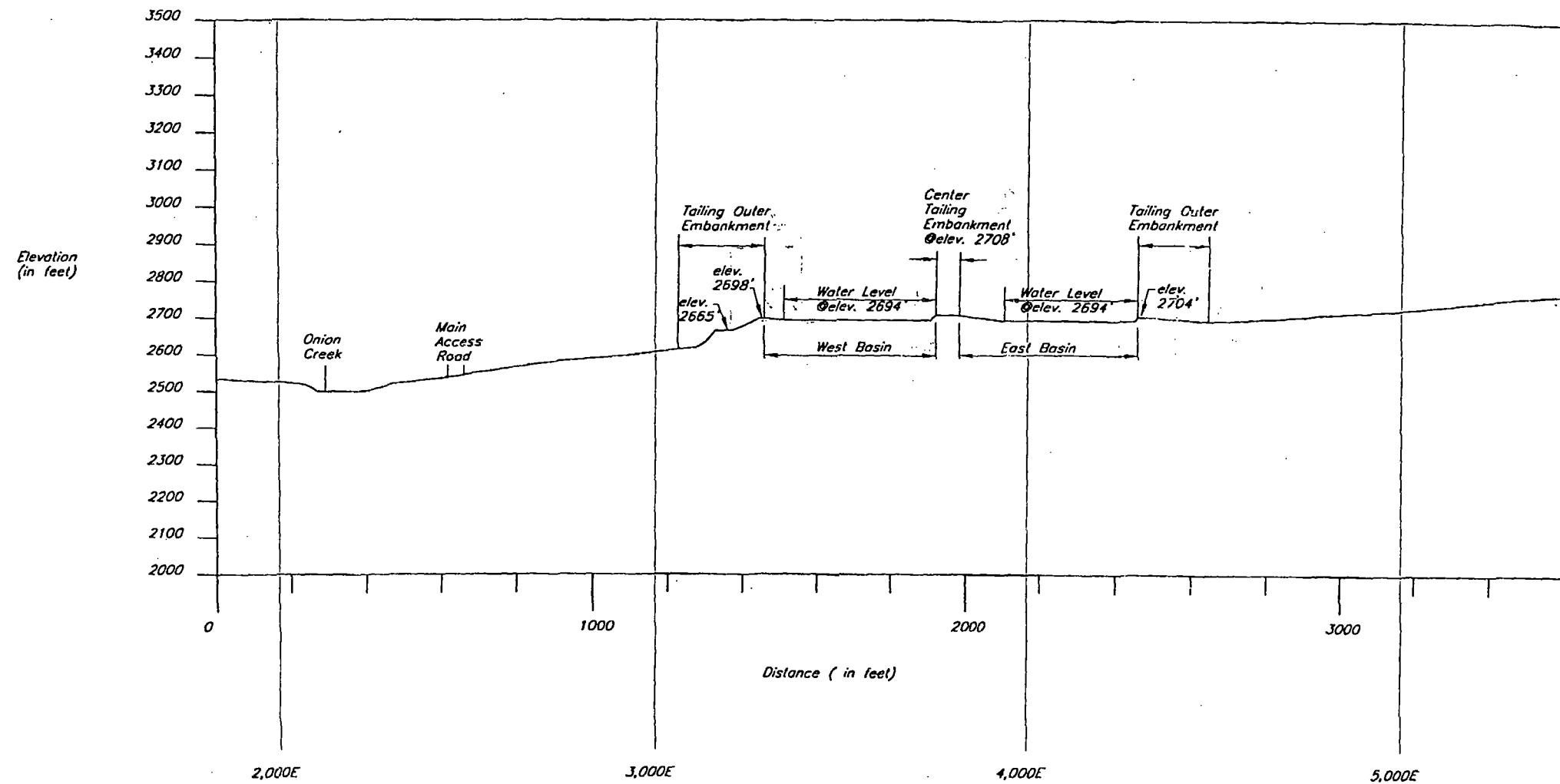
HALLAM KNIGHT PIESOLD LTD. ENVIRONMENTAL CONSULTANTS-VANCOUVER, B.C.		EQUINOX RESOURCES (WASHINGTON) INC.	
		VAN STONE MINE-OPEN PIT	
		EXISTING TAILINGS AREA AND AREA OF DISTURBANCE FIGURE 25	
DESIGNED	BH		
DRAWN	AW		
CHECKED	BH		
APPROVED			
DATE	JUNE 2, 1999	SCALE AS SHOWN	DRG. NO. H3172
		REV.	0

DMS FILE: VST17A.DWG, 11/20/99, 1:200, JULY 12, 1999



HALLAM KNIGHT PIESOLD LTD. ENVIRONMENTAL CONSULTANTS-VANCOUVER, B.C.		EQUINOX RESOURCES (WASHINGTON) INC.	
DESIGNED	BH	VAN STONE MINE-OPEN PIT	
DRAWN	AW	CLOSURE OF EXISTING TAILINGS AREA	
CHECKED	BH	FIGURE 26	
APPROVED			
DATE	JUNE 2, 1999	SCALE AS SHOWN	ORG. NO. H3172
		REV.	0

SECTION 1
FIGURE 26



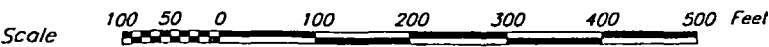
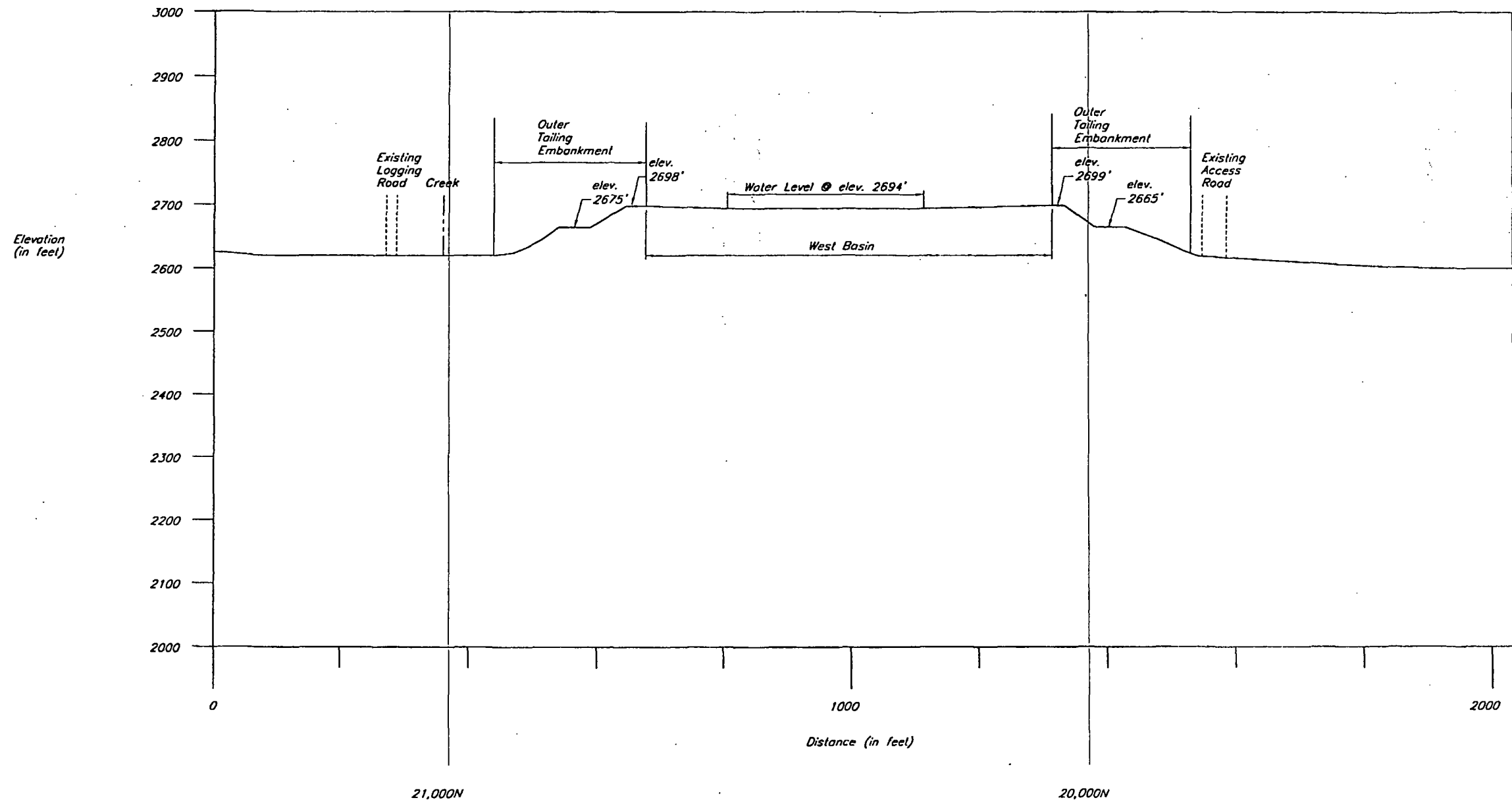
Scale 200 100 0 200 400 600 800 1000 Feet

NOT FOR CONSTRUCTION

HALLAM KNIGHT PIESOLD LTD. ENVIRONMENTAL CONSULTANTS-VANCOUVER, B.C.		EQUINOX RESOURCES (WASHINGTON) INC.	
	DESIGNED	BH	VAN STONE MINE-OPEN PIT CLOSURE OF EXISTING TAILINGS AREA SECTION 1 FIGURE 27
	DRAWN	AW	
	CHECKED	BH	
	APPROVED		
DATE	JUNE 4, 1999		SCALE AS SHOWN
DRG. NO.	H3172		REV. -

DRG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED	REV.	DATE	DESCRIPTION	APPROVED
REFERENCE DRAWINGS				REVISIONS				REVISIONS	

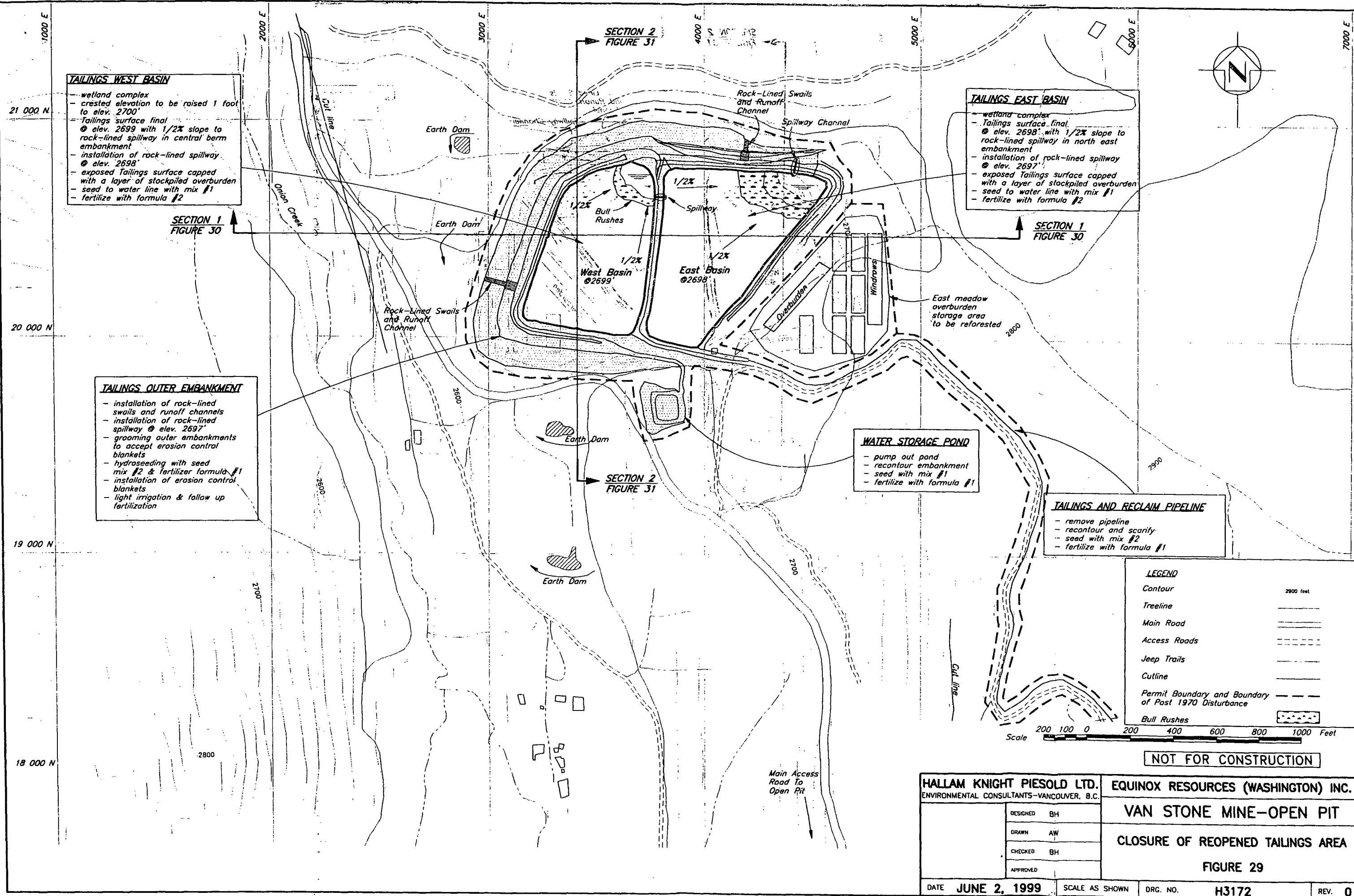
SECTION 2
FIGURE 26



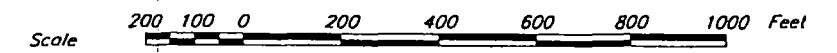
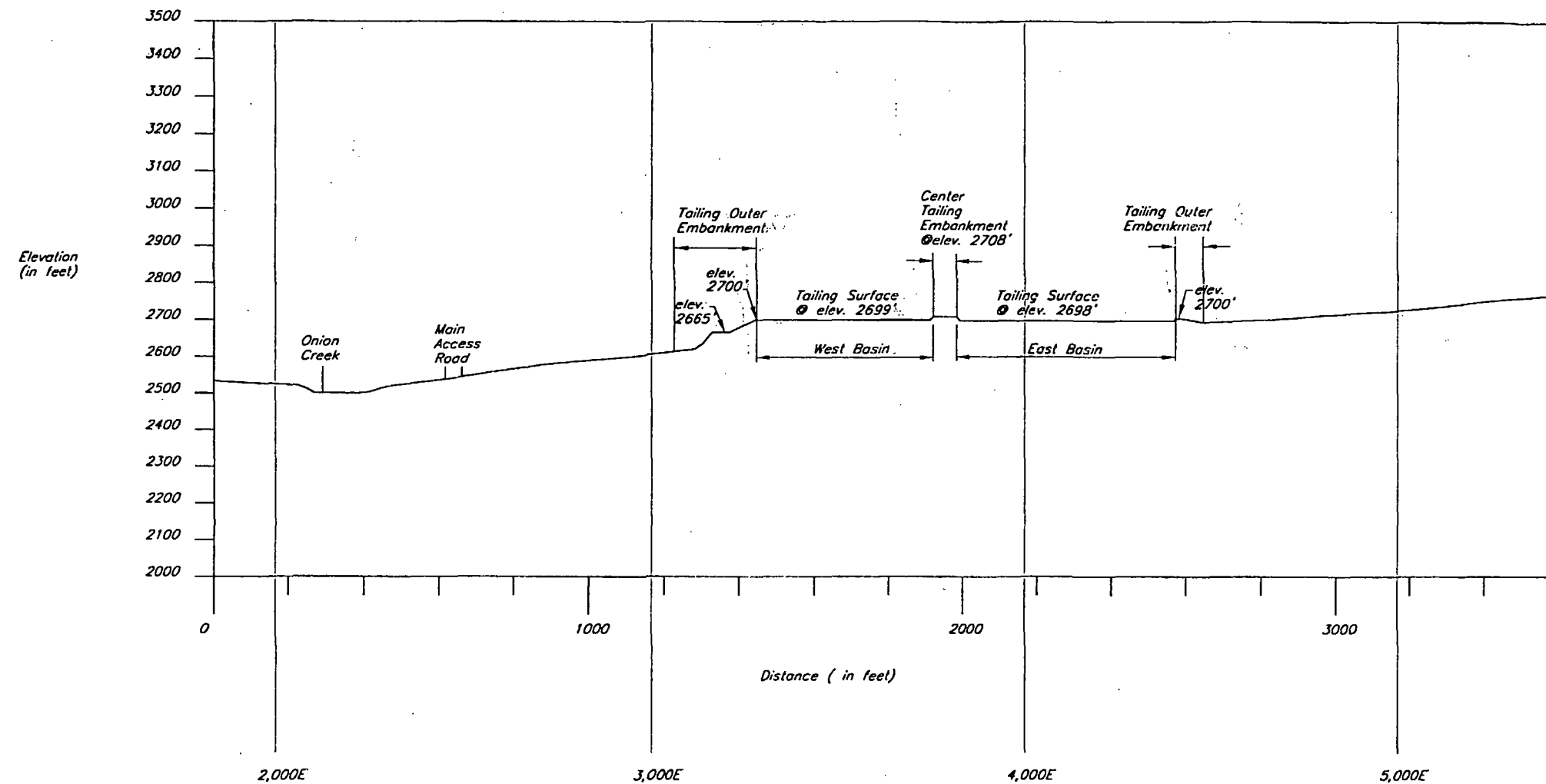
NOT FOR CONSTRUCTION

										SECTION 2		FIGURE 28									
DRG. NO.	DESCRIPTION			REV.	DATE	DESCRIPTION			APPROVED	REV.	DATE	DESCRIPTION			APPROVED						
REFERENCE DRAWINGS					REVISIONS					REVISIONS					DATE	MAY 21, 1999	SCALE AS SHOWN	DRG. NO.	H3172	REV.	—

HALLAM KNIGHT PIESOLD LTD. ENVIRONMENTAL CONSULTANTS—VANCOUVER, B.C.		EQUINOX RESOURCES (WASHINGTON) INC.	
DESIGNED BH		VAN STONE MINE—OPEN PIT	
DRAWN AW		CLOSURE OF EXISTING TAILINGS AREA	
CHECKED BH		SECTION 2	
APPROVED		FIGURE 28	



SECTION 1
FIGURE 29



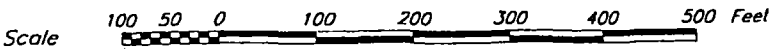
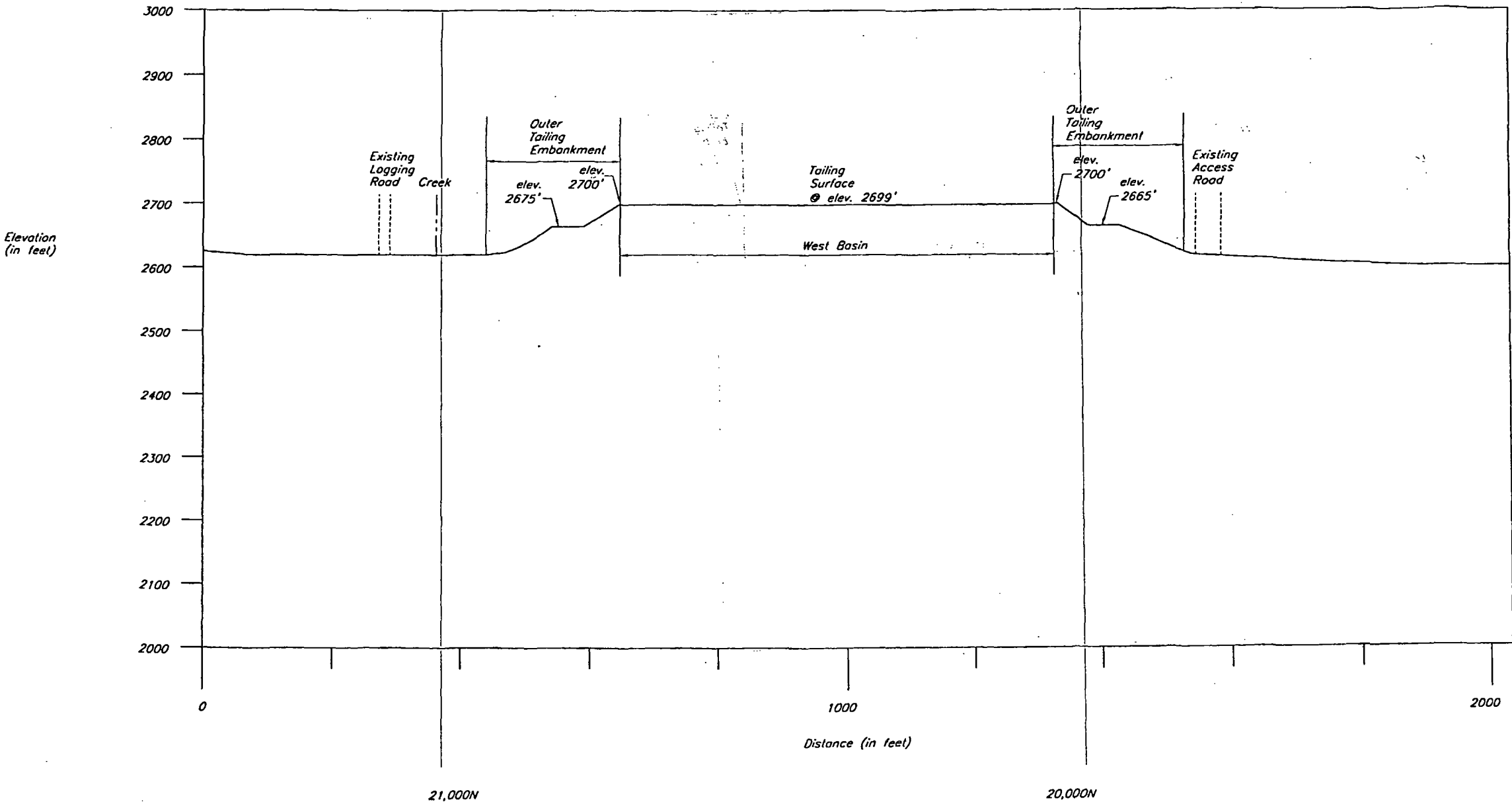
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HALLAM KNIGHT PIESOLD LTD. ENVIRONMENTAL CONSULTANTS-VANCOUVER, B.C.				EQUINOX RESOURCES (WASHINGTON) INC.			
				VAN STONE MINE-OPEN PIT			
				CLOSURE OF REOPENED TAILINGS AREA			
				SECTION 1			
				FIGURE 30			
DATE				JUNE 4, 1999			
SCALE				AS SHOWN			
DRG. NO.				H3172			
REV.				-			

DRG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED	REV.	DATE	DESCRIPTION	APPROVED
REFERENCE DRAWINGS				REVISIONS				REVISIONS	

D:\PROJECTS\H3172\035\035.DWG 1"=200' PLOT 1-200 JUNE 4, 1999

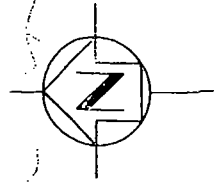
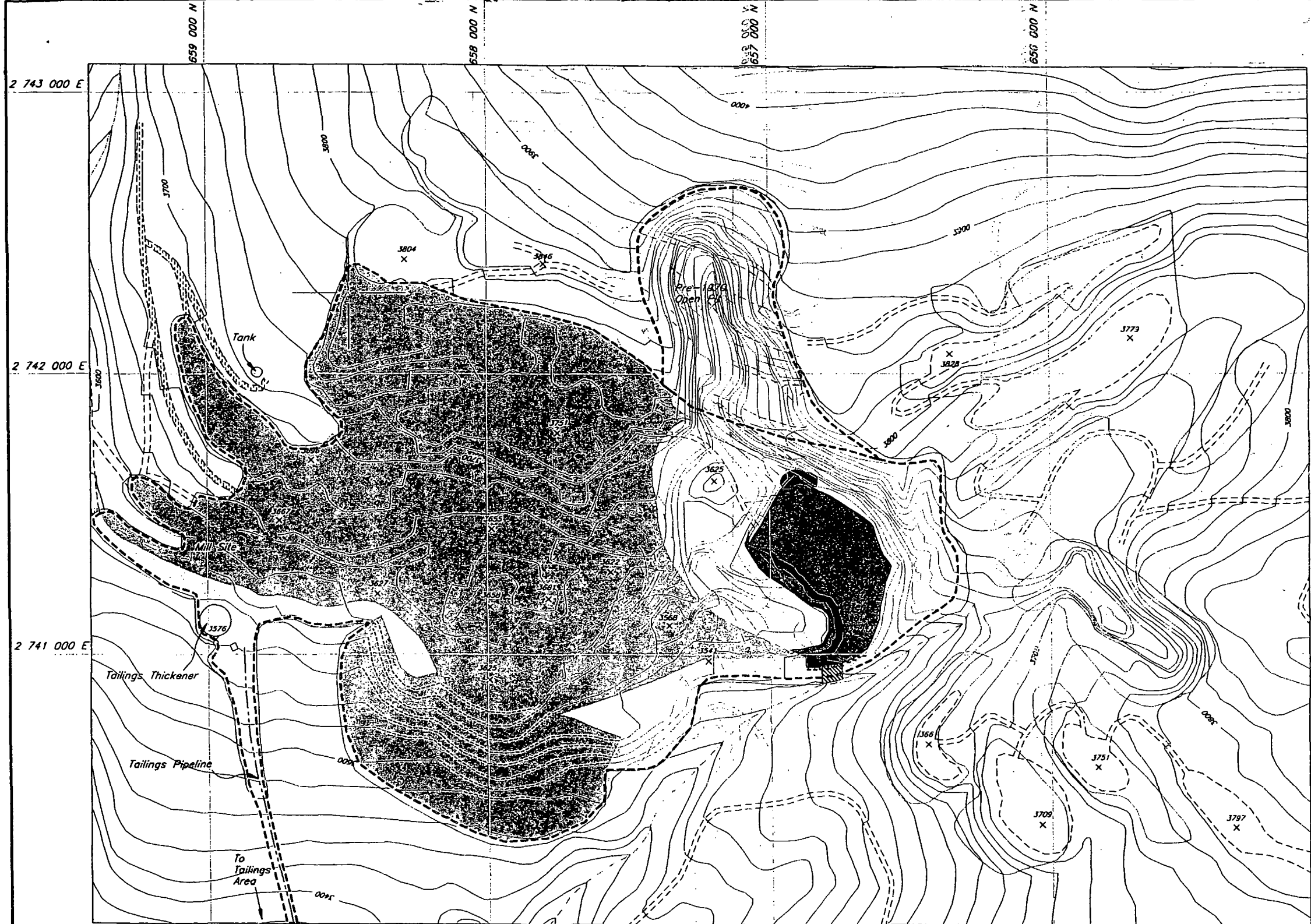
SECTION 2
FIGURE 29









NOT FOR CONSTRUCTION

DRG. NO.		DESCRIPTION		REV.	DATE	DESCRIPTION		APPROVED	REV.		DATE		DESCRIPTION		APPROVED	APPROVED		FIGURE 31	
REFERENCE DRAWINGS				REVISIONS				REVISIONS				DATE MAY 21, 1999		SCALE AS SHOWN		DRG. NO. H3172		REV. —	













000 FILE: V3172\000\029 1"=100' Plot 1=100' MAY 21, 1999



TYPES OF VEGETATIONS

- Open Water 
- Aquatic Vegetation 
- Open Grassland 
- Cliffs and Scree Slopes 
- Grassland to Sedge Meadow 
- Reforested 

LEGEND

- PERMIT BOUNDARY AND BOUNDARY OF POST 1970 DISTURBANCE 
- CONTOUR - INDEX  3800 feet
- CONTOUR - INTERMEDIATE 
- CONTOUR - DEPRESSION 
- TREELINE 
- ROAD 
- ROADS TO BE RECLAIMED 
- STREAM - PERENNIAL 
- STREAM - INTERMITTENT 
- POND 
- PIPELINE 
- BUILDING 

REFERENCE

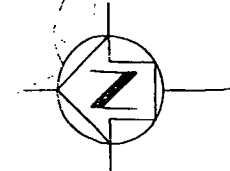
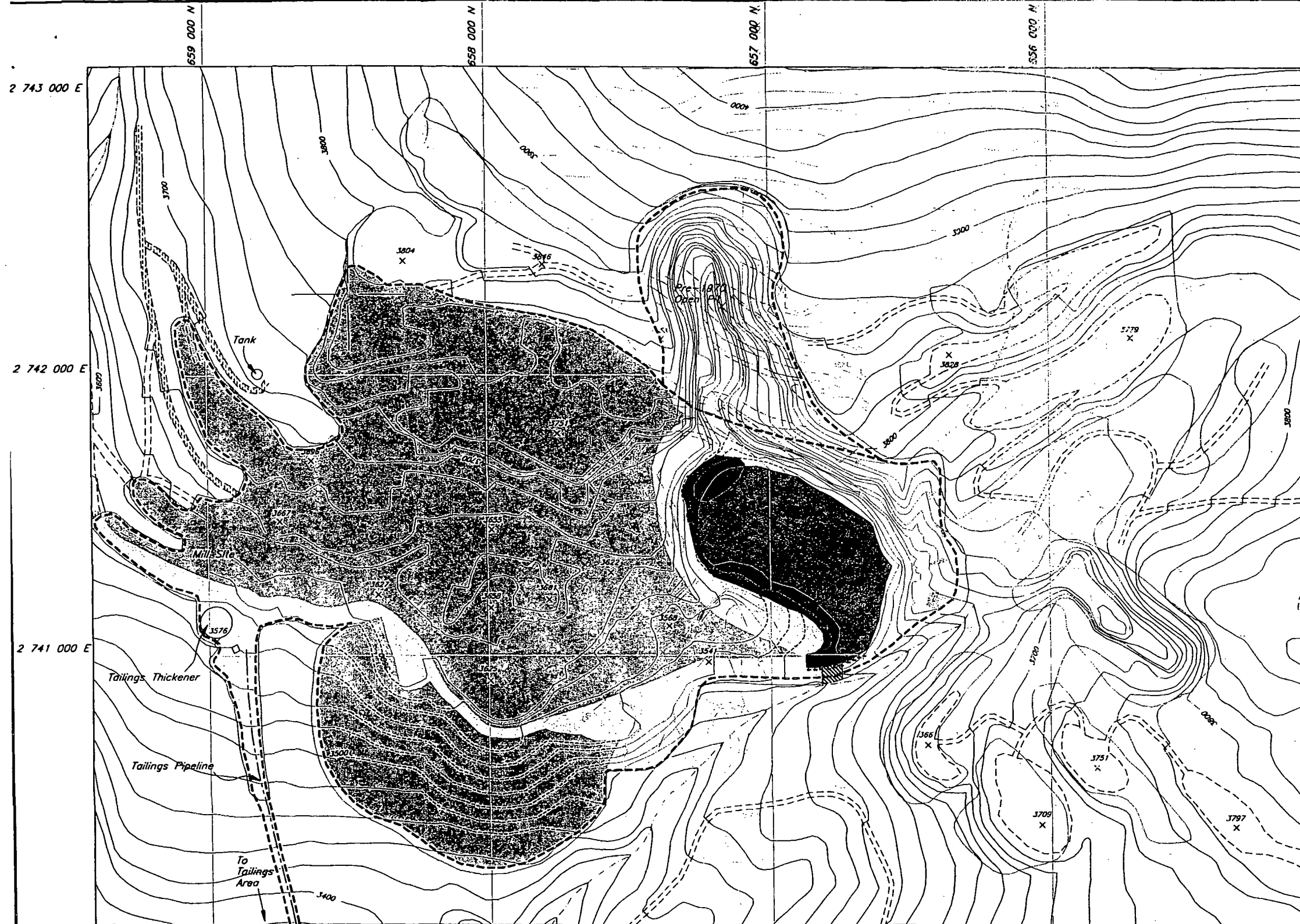
MAP BY: DEPT OF NATURAL RESOURCES
PHOTOGRAPHY DATE: 7/18/95








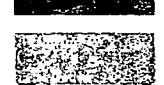
NOT FOR CONSTRUCTION

HALLAM KNIGHT PIESOLD LTD. ENVIRONMENTAL CONSULTANTS-VANCOUVER, B.C.		EQUINOX RESOURCES (WASHINGTON) INC.	
	DESIGNED	BH	VAN STONE MINE-OPEN PIT
	DRAWN	AW	
	CHECKED	BH	
	APPROVED		
		REVEGETATION PLAN OF EXISTING MINE SITE FIGURE 32	
DATE	JUNE 2, 1999	SCALE AS SHOWN	DRG. NO. H3172
		REV.	0







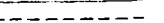
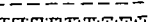
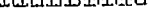
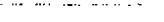
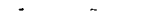
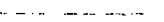
C:\P\H\H3172\027A.DWG (JUNE 2, 1999) 1:250' Plot 1x200' JUN 2, 1999



TYPES OF VEGETATION

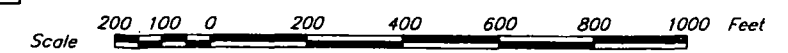
- Open Water 
- Aquatic Vegetation 
- Open Grassland 
- Cliffs and Scree Slopes 
- Grassland to Sedge Meadow 
- Reforested 

LEGEND

- PERMIT BOUNDARY AND BOUNDARY OF POST 1970 DISTURBANCE 
- CONTOUR - INDEX 
- CONTOUR - INTERMEDIATE 
- CONTOUR - DEPRESSION 
- TREELINE 
- ROAD 
- ROADS TO BE RECLAIMED 
- STREAM - PERENNIAL 
- STREAM - INTERMITTENT 
- POND 
- PIPELINE 
- BUILDING 

REFERENCE

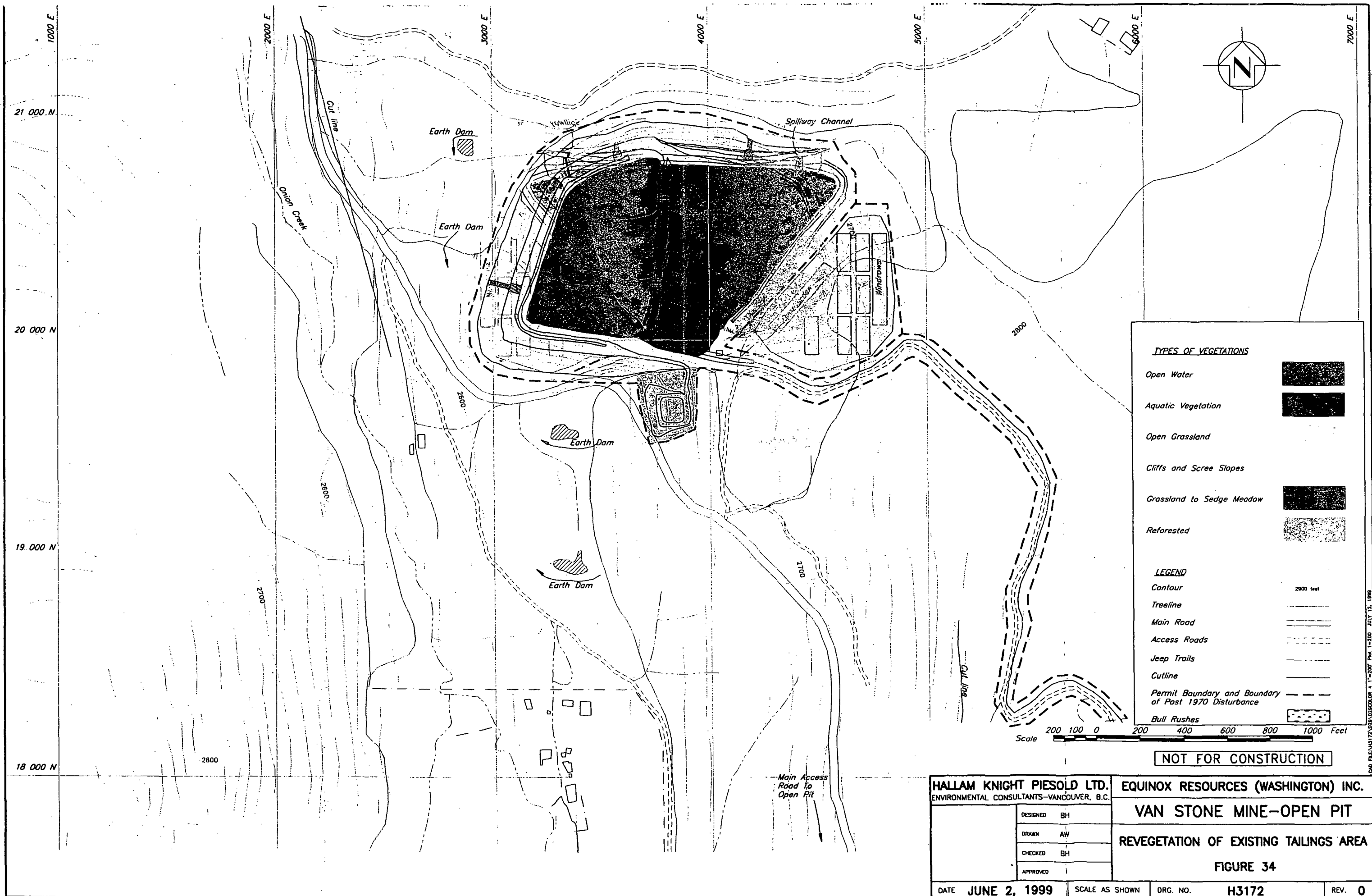
MAP BY: DEPT OF NATURAL RESOURCES
PHOTOGRAPHY DATE: 7/18/95



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HALLAM KNIGHT PIESOLD LTD. ENVIRONMENTAL CONSULTANTS-VANCOUVER, B.C.		EQUINOX RESOURCES (WASHINGTON) INC.	
	DESIGNED	BH	VAN STONE MINE-OPEN PIT REVEGETATION PLAN OF RE-OPENED OPERATIONS FIGURE 33
	DRAWN	AW	
	CHECKED	BH	
	APPROVED		
DATE	JUNE 2, 1999	SCALE AS SHOWN	DRG. NO. H3172
		REV. 0	

CAD FILE: H3172.DWG (1:2500) 11-2000 JULY 12, 1999



HALLAM KNIGHT PIESOLD LTD.
ENVIRONMENTAL CONSULTANTS-VANCOUVER, B.C.

EQUINOX RESOURCES (WASHINGTON) INC.

VAN STONE MINE-OPEN PIT

REVEGETATION OF EXISTING TAILINGS AREA

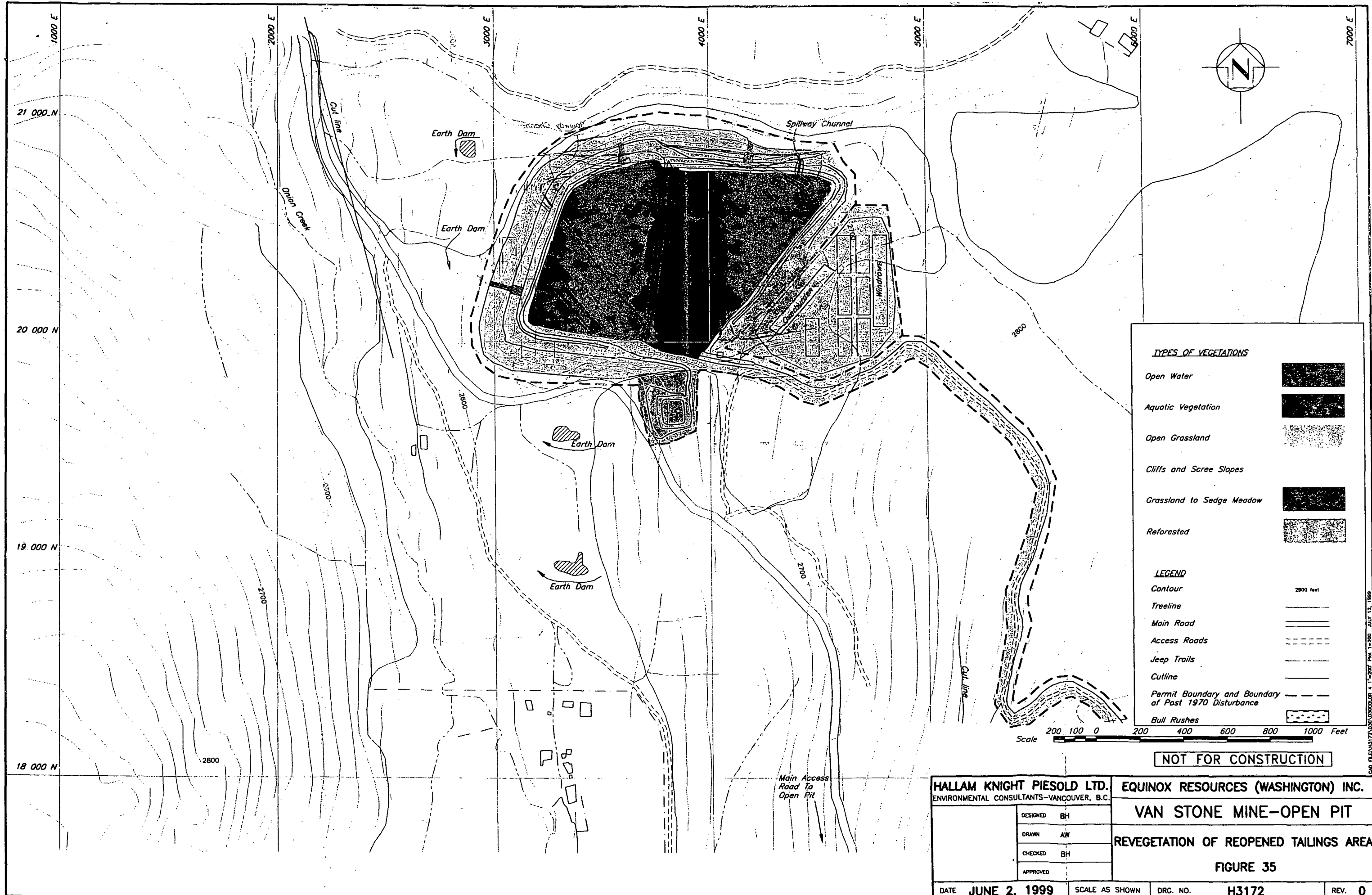
FIGURE 34

DATE JUNE 2, 1999

SCALE AS SHOWN

DRG. NO. H3172

REV. 0



APPENDICES

APPENDIX A
LAND TENURE AND
LAND OWNERSHIP SCHEDULE

SCHEDULE A

PARCEL A

The Mother Lode, North Star, Noonday and Moonlight Lode Mining Claims, designed as Survey No. 1288, embracing a portion of Section 34, Township 38 North, Range 40, East, W.M., in Stevens County, Washington, as conveyed to American Smelting and Refining Company, a New Jersey corporation, by Patent dated August 20, 1957, recorded under Auditor's File No. 313953.

PARCEL B

The E-1/2 of Section 33, Township 38 North, Range 40, East, W.M., in Stevens County, Washington.

PARCEL C

The E-1/2 of the NE-1/4, the SW-1/4 of the NE-1/4 and N-1/2 of the SE-1/4 of Section 32, Township 38 North, Range 40, East, W.M., in Stevens County, Washington.

PARCEL D

The SW-1/4 of the SW-1/4 of Section 22, the W 1/2 of the W 1/2 of Section 27; all in Township 38 North, Range 40, East.

PARCEL E

The E-1/2 of the NE-1/4 of Section 30, Township 38 North, Range 40, East, W.M., in Stevens County, Washington.

PARCEL F

The W-1/2 of the NW-1/4 and the NE-1/4 of the SW-1/4 of Section 29, Township 38 North, Range 40, East, W.M., in Stevens County, Washington.

PARCEL G

Government Lot 4 of Section 4; Government Lots 1, 2, and 7 of Section 5; all in Township of 37 North, Range 40, East, W.M., in Stevens County, Washington.

PARCEL H

The SE-1/4 of the NE-1/4, the NE-1/4 of the SE-1/4 and the SE-1/4 of the SE-1/4 Section 28, Township 38 North, Range 40, East, W.M., in Stevens County, Washington.

Specifically including the following tangible property, whether attached or unattached and whether or not a fixture or appurtenance:

Tangible Property

Buildings
Crusher buildings
Mill building
Mill Shop
Warehouse
Change House
Assay Office
Office
Garage
Scale house
Core storage
Switch building
Pit shop

Miscellaneous

20 M gallon water tank
Return water tank
Bunk house
3-bedroom residence
3-bedroom residence
2-bedroom residence
2-bedroom residence
Power feeders
Pump power line
T-6 tractor
Car spotter
Tailings pipe line
Tailings flume
Tailings dam
60 M gallon water tank
200 M gallon water tank
Fire mains and hydrants
Domestic water main
Pipe line
Pipe line
Dam and pipe line

Machinery and Equipment

Crushing plant
Mill
Mill shop
Warehouse
Assay office
Scale house
Mine shop equipment
Road equipment

Miscellaneous

Dam and pipe line
Dam and pipe line
Pit power lines & switchgear
Pit water line
Pit air line

Together with all improvements, water rights, rights-of-way and other rights appurtenant thereto, including the following:

A dam, weir house, pipeline and access road located within lands in Section 4, Township 47 North, Range 40 East, W.M., covered by a Special Use Permit of the Colville National Forest, dated August 19, 1960, subject, however, to re-issuance of said Special Use Permit;

A water right to 75 gallons per minute from the Northeast Quarter of the Northeast Quarter (NE-1/4 NE-1/4), Section 30, Township 38 North, Range 40 East, W.M., as specified in Ground Water Permit 2531, and recorded in Certificate Record No. 5, page 2296-A, Records of Stevens County;

A water right to 0.40 of a cubic foot per second from the Northeast Quarter (NE-1/4) of Section 4, Township 37 North, Range 40 East, W.M., as specified in Appropriation Permit No. 7398, and recorded in Certificate Record No. 11, page 5161, Records of Stevens County;

A water right to 0.45 of a cubic foot per second from the Southeast Quarter (SE-1/4) of Section 33, Township 38 North, Range 40 East, W.M., as specified in Appropriation Permit No. 7399, and recorded in Certificate Record No. 12, page 5012, Records of Stevens County; and

A water right to 0.20 of a cubic foot per second from the Southwest Quarter (SW-1/4) of Section 27, Township 39 North, Range 40 East, W.M., as specified in Appropriation Permit No. 7397, and recorded in Certificate Record No. 11, page 5011, Records of Stevens County;

together with:

An easement for a water pipeline across the Southwest Quarter of the Southeast Quarter (SW-1/4 SE-1/4) of Section 29, Township 38 North, Range 40 East, W.M., as recorded in Book 150 of deeds, at page 89, Records of Stevens County;

and together with:

An easement for a pipeline across the Southeast Quarter of the Southwest Quarter (SE-1/4 SW-1/4) of Section 29, Township 38 North, Range 40 East, W.M., as recorded in Book 150 of deeds, at page 90, Records of Stevens County;

and together with:

All of those certain easements for rights-of-way for road leading from public county road to Van Stone Mine in Stevens County, Washington, and particularly described as follows:

That certain right-of-way recorded September 3, 1947, in Book 129 of Deeds, at page 529, public records of Stevens County, conveying a right-of-way easement for a road 50 feet in width over and across property located in the Southwest Quarter of the Southwest Quarter (SW-1/4 SW-1/4) of Section 29, Township 38 North, Range 40 East, W.M.;

That certain right-of-way recorded September 3, 1947, in Book 129 of Deeds, at page 525, public records of Stevens County, conveying a right-of-way easement for a road 50 feet in width over and across property located in:

The Southeast Quarter of the Southeast Quarter (SE-1/4 SE-1/4) of Section 29, Township 38 North, Range 40 East, W.M.;

The South Half of the Southwest Quarter (S-1/2 SW-1/4) of Section 28, Township 38 North, Range 40 East, W.M.;

The Southwest Quarter of the Southeast Quarter (SW-1/4 SE-1/4) of Section 28, Township 38 North, Range 40 East, W.M.;

The Northwest Quarter of the Northwest Quarter (NW-1/4 NW-1/4) of Section 33, Township 38 North, Range 40 East, W.M.;

The Northeast Quarter of the Northwest Quarter (NE-1/4 NW-1/4) of Section 33, Township 38 North, Range 40 East, W.M.;

That certain right-of-way recorded September 3, 1947 in Book 129 of Deeds, at page 523, public records of Stevens County conveying a right-of-way easement for a road 50 feet in width over and across property located in the Northeast Quarter of the Northeast Quarter (NE-1/4 NE-1/4) of Section 32, Township 38 North, Range 40 East, W.M.;

That certain right-of-way recorded September 3, 1947, in Book 129 of Deeds, at page 521, public records of Stevens County conveying a right-of-way easement for a road 50 feet in width over and across property located in the Southeast Quarter of the Southwest Quarter (SE-1/4 SW-1/4) of Section 29, Township 38 North, Range 40 East, W.M.;

That certain right-of-way recorded September 3, 1947, in Book 129 of Deeds, at page 519, public records of Stevens County conveying a right-of-way easement for a road 50 feet in width over and across property located in the Southwest Quarter of the Southeast Quarter (SW-1/4 SE-1/4) of Section 29, Township 38 North, Range 40 East, W.M.;

That certain right-of-way recorded September 3, 1947, in Book 129 of Deeds, at page 531, public records of Stevens County conveying a right-of-way easement for a road 50 feet in width over and across property located in the Northwest Quarter of the Southwest Quarter (NW-1/4 SW-1/4) of Section 29, Township 38 North, Range 40 East, W.M.;

A right-of-way for a road over and across the Southeast Quarter of the Southeast Quarter (SE-1/4 SE-1/4) of Section 29, the Southwest Quarter (SW-1/4) and the West Half of the Southeast Quarter (W-1/2 SE-1/4) of Section 28, and the Northwest Quarter of the Northwest Quarter (NW-1/4 NW-1/4) of Section 33, Township 37 North, Range 40 East, W.M., as reserved to Grantors in a Quitclaim Deed from American Smelting and Refining Company to Ernest Lotz, et al, dated July 23, 1965;

and together with:

A right-of-way for the transmission of electricity across the Southeast Quarter of the Southeast Quarter (SE-1/4 SE-1/4) of Section 29, the Southwest Quarter (SW-1/4) and the West Half of the Southeast Quarter (W-1/2 SE-1/4) of Section 28, Township 37 North, Range 40 East, W.M., as reserved to Grantors in the same Quitclaim Deed to Ernest Lotz, et al.

V.S. No. 7. This claim is located in Sec/33, T 38 N, R 40 E, W.M. Filed May 5, 1971 in 30 Quartz at page 8.

V.S. No. 3 - This claim is located in Sec/33, T 39 N, R 40 E, W.M. and it is joined from the north by property of L.Menegas, from the east by claim V.S. No. 2, from the west by claim V.S. No. 4 and from the south by claim V.S. No. 6. Filed May 5, 1971 in 30 Quartz at page 9.

V.S. No. 6 - This claim is located in Sec/4, T 37 N, R 40 E, W.M. and it is joined from the north by claim V.S. No. 3, and from the east by claim V.S. No. 7. Filed May 5, 1971 in 30 Quartz at page 10.

V.S. No. 7 - This claim is located in Sec/4, T 37 N, R 40 E, W.M. and it is joined from the north by claim V.S. No. 2 and from the east by claim V.S. No. 8 and from the west by claim V.S. No. 6. Filed May 5, 1971 in 30 Quartz at page 11.

V.S. No. 8 - This claim is located in Sec/4, T 37 N, R 40 E, W.M. Its corner No. 3, which is the northeast corner is identical with the corner No. 3, which is the southeast corner of claim V.S. No. 1. The common corner described is in the vicinity of 1/4 corner Sec/33, T 38 N, R 40 E, and Sec/4, T 37 N, R 40 E. This claim is joined from the north by claim V.S. No. 1 and from the west by claim V.S. No. 7. Filed May 5, 1971 in 30 Quartz at page 12.

Amendment including unpatented claims Lea, Mauve and Tillicum;

together with all the minerals, metals and ores therein; and all the rights privileges had, used, and enjoyed therewith.

**EQUINOX RESOURCES (WASH) INC.
VAN STONE MINE**

**Appendix B, Table 1
Soil Chemistry Analysis**

Sample ID	Lab #	pH	P ug/g	K ug/g	O.M. %	NO3-N ug/g	NH4-M ug/g	SO4-S ug/g	B ug/g	E.O. uS/cm	PARTICLE SIZE DISTRI.			TEXTURE USDA1950						
											%Sand	%Clay	%Silt							
Van Stone Fresh Tailings	1986	7.0	4.2	21	0.64	0.7	0.5	1010	0.15	3.76	66.0	1.0	28.0	Sandy Loam						
Van Stone Old Tailings	1987	6.0	5.7	11	0.41	0.5	0.8	107	0.12	0.14	33.0	2.0	15.0	Loamy Sand						
Van Stone Native	1988	8.0	7.5	840	4.05	51.4	2.4	36	0.20	1.20	44.0	18.0	10.0	Loam						
Sample ID	Lab #	Ca ug/g	Mg ug/g	K ug/g	Na ug/g	Zn ug/g	Mn ug/g	Cu ug/g	Fe ug/g	P ug/g	B ug/g	Pb ug/g	Al ug/g	Cr ug/g	Cd ug/g	Ba ug/g	Ni ug/g	Co ug/g	Be ug/g	Mo ug/g
Van Stone Fresh Tailings	1986	114000	23300	400	229	9300	114	40.1	8670	160	9450	13800	370	21.3	41	1.2	10.5	5.21	0.25	10.7
Van Stone Old Tailings	1987	80900	20200	440	312	5300	87.8	32.2	7290	308	4470	440	1100	13.0	18.2	11.5	10.7	5.01	0.25	6.05
Van Stone Native	1988	8750	5340	4290	704	100	416	23.6	20040	1120	350	822	20400	21.1	3.48	273	28.3	12.8	0.04	12.7

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